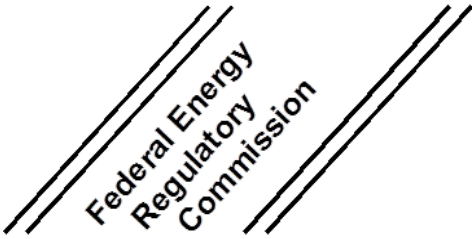


Office of
Energy Projects

November 2018

El Paso Natural Gas Company LLC **Docket No. CP18-332-000**

South Mainline Expansion Project

Environmental Assessment

Washington, DC 20426

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:
OEP/DG2E/Gas 4
El Paso Natural Gas Company LLC
South Mainline Expansion Project
Docket No. CP18-332-000

TO THE INTERESTED PARTY:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared an environmental assessment (EA) for the South Mainline Expansion Project (Project), proposed by El Paso Natural Gas Company LLC (EPNG) in the above-referenced docket. EPNG filed an application in Docket No. CP18-332-000 requesting a Certificate of Public Convenience and Necessity pursuant to Section 7(c) of the Natural Gas Act to construct and operate certain natural gas pipeline facilities. EPNG requests authorization to construct two new natural gas compressor stations on its existing South Mainline pipeline system in Luna County, New Mexico and Cochise County, Arizona; and a 17-mile-long, 30-inch-diameter pipeline loop in El Paso and Hudspeth Counties, Texas. The proposed facilities would allow EPNG to transport an incremental 337,949 dekatherms per day to Arizona and Mexico delivery points.

The EA assesses the potential environmental effects of the construction and operation of the South Mainline Expansion Project in accordance with the requirements of the National Environmental Policy Act. The FERC staff concludes that approval of the proposed Project, with appropriate mitigating measures, would not constitute a major federal action significantly affecting the quality of the human environment.

The proposed South Mainline Expansion Project includes the following facilities:

- a new 13,220 horsepower compressor station in Luna County, New Mexico ("Red Mountain Compressor Station");
- a new 13,220 horsepower compressor station in Cochise County, Arizona ("Dragoon Compressor Station");
- approximately 17 miles of 30-inch-diameter pipeline loop of existing Line 1100 between mileposts 174.5 and 191.5 in Hudspeth and El Paso counties, Texas.

The Commission mailed a copy of the *Notice of Availability* for the EA to federal, state, and local government representatives and agencies; elected officials; environmental and public interest groups; Native American tribes; potentially affected landowners and other interested individuals and groups; and newspapers and libraries in the Project area.

The EA is only available in electronic format. It may be viewed and downloaded from the FERC's website (www.ferc.gov), on the Environmental Documents page (https://www.ferc.gov/industries/gas/enviro/eis.asp). In addition, the EA may be accessed by using the eLibrary link on the FERC's website. Click on the eLibrary link (https://www.ferc.gov/docs-filing/elibrary.asp), click on General Search, and enter the docket number in the "Docket Number" field, excluding the last three digits (i.e. CP18-332). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at FercOnlineSupport@ferc.gov or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659.

Any person wishing to comment on the EA may do so. Your comments should focus on EA's disclosure and discussion of potential environmental effects, reasonable alternatives, and measures to avoid or lessen environmental impacts. The more specific your comments, the more useful they will be. To ensure that the Commission has the opportunity to consider your comments prior to making its decision on this Project, it is important that we receive your comments in Washington, DC on or before 5:00 pm Eastern Time on **December 14, 2018.**

For your convenience, there are three methods you can use to file your comments to the Commission. The Commission encourages electronic filing of comments and has staff available to assist you at (866) 208-3676 or FercOnlineSupport@ferc.gov. Please carefully follow these instructions so that your comments are properly recorded.

(1) You can file your comments electronically using the eComment feature on the Commission's website (www.ferc.gov) under the link to Documents and Filings. This is an easy method for submitting brief, text-only comments on a project;

(2) You can also file your comments electronically using the eFiling feature on the Commission's website (www.ferc.gov) under the link to Documents and Filings. With eFiling, you can provide comments in a variety of formats by attaching them as a file with your submission. New eFiling users must first create an account by clicking on "eRegister." You must select the type of filing you are making. If you are filing a comment on a particular project, please select "Comment on a Filing"; or

(3) You can file a paper copy of your comments by mailing them to the following address. Be sure to reference the Project docket number (CP18-332-000) with your submission: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street NE, Room 1A, Washington, DC 20426

Any person seeking to become a party to the proceeding must file a motion to intervene pursuant to Rule 214 of the Commission's Rules of Practice and Procedures (18 CFR 385.214). Motions to intervene are more fully described at http://www.ferc.gov/resources/guides/how-to/intervene.asp. Only intervenors have the right to seek rehearing or judicial review of the Commission's decision. The Commission may grant affected landowners and others with environmental concerns intervenor status upon showing good cause by stating that they have a clear and direct interest in this proceeding which no other party can adequately represent. **Simply filing environmental comments will not give you intervenor status, but you do not need intervenor status to have your comments considered.**

Additional information about the Project is available from the Commission's Office of External Affairs, at **(866) 208-FERC**, or on the FERC website (www.ferc.gov) using the eLibrary link. The eLibrary link also provides access to the texts of all formal documents issued by the Commission, such as orders, notices, and rulemakings.

In addition, the Commission offers a free service called eSubscription which allows you to keep track of all formal issuances and submittals in specific dockets. This can reduce the amount of time you spend researching proceedings by automatically providing you with notification of these filings, document summaries, and direct links to the documents. Go to www.ferc.gov/docs-filing/esubscription.asp.

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

TECHNICAL ACRONYMS AND ABBREVIATIONS

AADT	annual average daily traffic
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
AQRV	Air Quality Related Value
BCC	Birds of Conservation Concern
BCR	Bird Conservation Region
BMP	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
Certificate	Certificate of Public Convenience and Necessity
CFE	Comisión Federal de Electricidad
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
Commission	Federal Energy Regulatory Commission
Dth	dekatherms
dBA	decibels on the A-weighted scale
EA	Environmental Assessment
ECMP	Environmental Construction Management Plan
EI	environmental inspector
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPNG	El Paso Natural Gas Company
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FERC Plan	FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan*
FERC Procedures	FERC's *Wetland and Waterbody Construction and Mitigation Procedures*
FWS	U.S. Fish and Wildlife Service
GHG	greenhouse gas
GWP	global warming potential
HAP	hazardous air pollutant
HCA	high consequence area
HDD	horizontal directional drill
HUC	Hydrologic Unit Code
IpaC	Information for Planning and Conservation System

L_{eq}	24-hour equivalent sound level
L_{dn}	day-night sound level
MAOP	maximum allowable operating pressure
MBTA	Migratory Bird Treaty Act
MP	Milepost
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NGA	Natural Gas Act
NMED	New Mexico Environment Department
NO_2	nitrogen dioxide
NOI	*Notice of Intent to Prepare an Environmental Assessment for the Proposed South Mainline Expansion Project and Request for Comments on Environmental Issues*
NO_x	nitrogen oxides
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	noise sensitive area
NSPS	New Source Performance Standards
NSR	New Source Review
OEP	Office of Energy Projects
PHMSA	Pipeline and Hazardous Materials Safety Administration
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in aerodynamic diameter
PM_{10}	particulate matter less than or equal to 10 microns in aerodynamic diameter
Project	South Mainline Expansion Project
PSD	Prevention of Significant Deterioration
ROW	right-of-way
Secretary	Secretary of the Commission
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SRP	Salt River Project Agricultural Improvement and Power District
TCEQ	Texas Commission on Environmental Quality
TPWD	Texas Parks and Wildlife Department
TXRRC	Texas Railroad Commission
USACE	U.S. Army Corps of Engineers
USDOT	Department of Transportation
USGS	U.S. Geological Survey
VOC	volatile organic compound

A. PROPOSED ACTION

1. Introduction

The staff of the Federal Energy Regulatory Commission (FERC or Commission) prepared this environmental assessment (EA) to address the environmental impacts of the construction and operation of the proposed South Mainline Expansion Project (Project). On December 21, 2017, El Paso Natural Gas Company LLC (EPNG) filed an application with the Commission in Docket No. CP18-332-000 under Section 7(c) of the Natural Gas Act (NGA) and Part 157 of the Commission's regulations. EPNG seeks to obtain a Certificate of Public Convenience and Necessity (Certificate) to construct and operate new compressor stations in Luna County, New Mexico and Cochise County, Arizona, and to construct a 17-mile-long loop pipeline in Hudspeth and El Paso counties, Texas. The proposed facilities would increase EPNG's capacity to transport natural gas on its South Mainline system by 337,949 dekatherms per day (Dth per day).

We[1] prepared this EA in compliance with the requirements of the National Environmental Policy Act (NEPA); the Council on Environmental Quality's (CEQ) regulations for implementing NEPA (Title 40 Code of Federal Regulations, Parts 1500-1508 [40 CFR 1500-1508]); and the Commission's regulations at 18 CFR 380. The EA is an integral part of the Commission's decision-making process on whether to issue EPNG a Certificate to construct and operate the proposed facilities. Our principal purposes in preparing this EA are to:

- identify and assess potential impacts on the natural and human environment that could result from implementation of the proposed action;
- identify and recommend reasonable alternatives and specific mitigation measures, as necessary, to avoid or minimize Project-related environmental impacts; and
- facilitate public involvement in the environmental review process.

EPNG has requested a Certificate by June 1, 2019, to meet an in-service date of July 1, 2020.

2. Project Purpose and Need

Under Section 7(c) of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate to construct and operate them. The Commission bases its decisions on technical competence, financing, rates, market demand, gas supply, environmental impact, long-term feasibility, and other issues concerning a proposed project.

[1] "We," "us," and "our" refer to the environmental staff of the FERC's Office of Energy Projects (OEP).

EPNG states that the proposed expansion facilities are necessary to meet the 321,000 Dth per day of capacity contracted to its customers Comisión Federal de Electricidad (CFE)[2] and the Salt River Agricultural Improvement and Power District (SRP). The Project would expand the delivery capability of the existing EPNG natural gas mainline pipeline system to allow CFE to ship 271,000 Dth per day of natural gas on the EPNG system and for SRP to ship 50,000 Dth per day.[3]

According to EPNG, most, if not all, of the natural gas being transported by CFE would ultimately be used to fuel natural gas-fired power plants in Mexico. The natural gas being transported by SRP would be used to fuel its fleet of electric generators in Arizona, including the Santan Generating Station in Gilbert, Arizona which is used to supplement base-load power plants and meet peak demand in the summer months to serve the Phoenix metropolitan area.

EPNG states that it would need to begin construction of the Project by October 2019 in order to meet its executed precedent agreement and meet the additional demand for natural gas requested by its customers.

EPNG also states that the Project would provide the added benefits of increasing flexibility and reliability to EPNG's existing customers by providing additional compression and mainline capacity, and that construction of the Project would not adversely affect existing customers because the facilities would not degrade any service currently being provided.

3. Scope of this Environmental Assessment

The resources and topics addressed in this EA include geology, soils, groundwater, surface waters, wetlands, fisheries, wildlife, vegetation, species of special concern, land use, recreation, visual impacts, socioeconomics, cultural resources, air quality, noise, reliability and safety, cumulative impacts, and alternatives. This EA describes the affected environment as it currently exists and the anticipated environmental consequences of the Project, and compares the Project's potential impact with that of various alternatives. This EA also presents our recommended mitigation measures.

As the lead federal agency for the Project, FERC is required to comply with Section 7 of the Endangered Species Act (ESA) and Section 106 of the National Historic Preservation Act. These statutes have been considered in the preparation of this EA. In addition to FERC, other federal, state, and local agencies may use this EA in approving or issuing any permits necessary for all or part of the proposed Project. Permits, approvals, and consultations for the Project are discussed in section A.11 of this EA.

[2] Comisión Federal de Electricidad is the state-owned electric utility of Mexico.

[3] By letter dated November 7, 2018, EPNG stated that Sempra Gas & Power Marketing, LLC has subscribed the remaining 16,949 Dth per day capacity.

4. Proposed Facilities

EPNG's proposed Project would consist of the following:

- a new compressor station ("Red Mountain Compressor Station") at the location of the former Deming Compressor Station in Luna County, New Mexico. This facility would have one new 13,220 horsepower Solar Mars 90 turbine/compressor unit and would be tied into EPNG's existing Line 1100 and Line 1103 at milepost (MP) 305.2;
- a new compressor station ("Dragoon Compressor Station") to be co-located with EPNG's existing Willcox Compressor Station in Cochise County, Arizona. This facility would have one new 13,220 horsepower Solar Mars 90 turbine/compressor unit and would be tied into EPNG's existing Lines 1100 and 1103 at MP 407.0; and
- approximately 17 miles of 30-inch-diameter loop pipeline[4] (Loop Line) as an extension of EPNG's existing Line 1100 between MPs 174.5 and 191.5 in Hudspeth and El Paso Counties, Texas. The Loop Line would include new mainline valves and pig launching/receiving[5] facilities at either end.

Figure 1 illustrates the general Project location; detailed maps and drawings of the Project are included in appendix A.

5. Construction and Operation Procedures

During construction and restoration of the Project, EPNG would implement the measures contained in its Environmental Compliance Management Plan (ECMP), which includes the following:

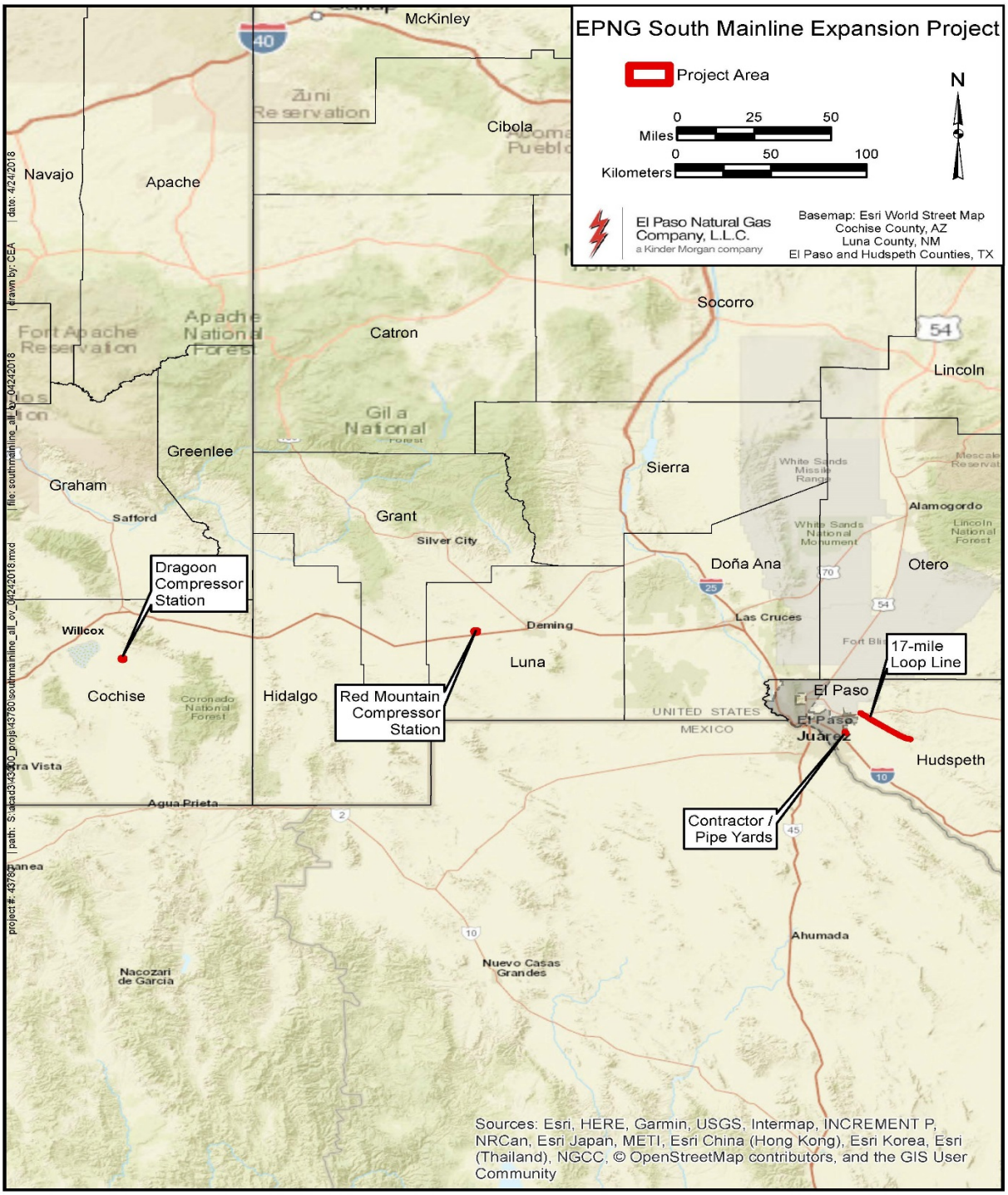
- FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures);[6]
- Fugitive Dust Control Plan;
- Hydrostatic Testing Best Management Practices Plan;
- Construction Standard C1130;

[4] A pipeline loop is constructed parallel to an existing pipeline to increase capacity.

[5] A "pig" is a tool that the pipeline company inserts into and pushes through the pipeline for cleaning the pipeline, conducting internal inspections, or other purposes.

[6] The FERC Plan and Procedures are a set of baseline construction and mitigation measures developed to minimize the potential environmental impacts of construction on upland areas, wetlands, and waterbodies. The Plan and Procedures can be viewed on the FERC website at: www.ferc.gov/industries/gas/enviro/plan.pdf and www.ferc.gov/industries/gas/enviro/procedures.pdf.

Figure 1: Project Location Map



- Reclamation Plan;
- Spill Prevention, Control, and Countermeasures Plan;
- Noxious Weed Control Plan; and
- Unanticipated Discovery Plan for Cultural Resources and Human Remains.

EPNG would also be required to adhere to applicable federal, state, and local permit requirements.

EPNG would employ an environmental inspector (EI) to oversee and document environmental compliance and prepare inspection reports during the construction phase to be submitted to the FERC. All Project-related construction personnel would be informed of the EI's authority and would receive job-appropriate environmental training prior to commencement of work on the Project. Depending on the progress of the construction, additional EIs may be added as necessary. FERC staff would also conduct inspections of the Project facilities during construction and restoration to determine compliance with any conditions attached to any Certificate that FERC may issue.

EPNG states that the typical construction schedule would be limited to only daylight hours, or 7:00 am to 7:00 pm Monday through Saturday. Typically, work would not take place on Sundays or federal holidays. Hydrotesting-related activities and some road crossings may be conducted on Sundays or during nighttime hours due to the ongoing nature of these activities. Otherwise, if EPNG believes extended work hours or days are necessary, EPNG would be required to request a variance from FERC in accordance with the Commission's established variance procedures (see recommended condition 1 in Section D of this EA).

EPNG plans to install the Loop Line beneath Montana Avenue (Texas State Highway 180/U.S. Route 62 [Highway 180/62]) at MP 190.1 using a horizontal directional drill (HDD) operation. The drilling period would be approximately 40 days in duration, with drilling only occurring during daylight hours. The "pipeline pull back" activity, however, would require work to take place continuously over an approximate 48-hour period. Section B.9.3 provides an analysis of the noise impacts that would be associated with HDD construction. As stated above, if EPNG believes extended work hours beyond these are necessary, EPNG would be required to request a variance from FERC.

All Project construction, staging, equipment and material storage, and parking would occur within the proposed compressor station sites; the existing Line Nos. 1100 and 1103 permanent easement, new permanent easement, and temporary workspaces as described further in sections A.7 and B.5; and at contractor yards, staging and laydown areas. As needed for construction, EPNG would obtain clean gravel and fill material from local commercial sources. Construction and general debris, and other wastes generated during construction would be disposed of at existing licensed commercial disposal facilities and in accordance with EPNG's Environmental Control Standards.

EPNG has proposed to construct the Loop Line generally within a new 60-foot-wide permanent right-of-way (ROW) located on the south side of EPNG's existing 120-foot-wide ROW. The existing ROW contains EPNG Lines Number 1103 and 1100, which are 30- and 26-inch-diameter pipelines, respectively, as well as a third line, a 20-inch-diameter Oneok pipeline. The centerline of the Loop Line would generally be located 30 feet south of Line Number 1100. In addition to the new permanent ROW, construction activities for the new Loop Line would generally take place within the existing ROW and in a 10- to 20-foot-wide temporary workspace along the south side of the proposed ROW between MPs 174.5 and 191.5, resulting in a nominal construction ROW width of 90 to 100 feet.

Between MPs 189.3 and 190.7, the pipeline would be constructed within the Homestead Meadows South development, and the Loop Line would be placed within EPNG's existing easement, 20 feet south of existing Line 1100 and 20 feet north of the limit of the easement. No temporary workspace or new permanent ROW would be required for this portion of the Project.

EPNG proposes a 210-foot-wide construction ROW and a 100-foot-wide permanent easement between MPs 188.25 and 189.0, where the proposed route crosses a sand dune area containing soft, sandy soils. The wider construction ROW would allow sufficient space to safely construct the Loop Line in this soft soil area. The expanded permanent easement in this area would provide for adequate workspace during any operational activities requiring excavation or heavy equipment. Appendix B includes a full listing of the additional temporary workspaces, contractor yards, and laydown areas EPNG would use in the construction of the Loop Line.

Excepting the sand dune area between MPs 188.25 and 189.00 and the residential area between MPs 189.3 and 190.7, EPNG has requested a 60-foot-wide easement between MPs 174.5 and 191.5 for the operation of the 30-inch-diameter loop adjacent to its existing ROW. Here, EPNG proposes to install the Loop Line 30 feet south of existing EPNG Line 1100 (or Oneok 20-inch-diameter pipeline in some locations), and 10 feet south of the limits of the existing easement. In its application, EPNG provided no justification supporting the need for an additional 50 feet of ROW outside the centerline of the Loop Line. We do not believe that El Paso's proposed 60 foot permanent expansion of the existing ROW is needed for operation and maintenance of the proposed 30-inch-diameter loop pipeline. Based on our experience and review of similar looping projects, was well as our understanding of pipeline operations and maintenance procedures, we find that expanding the existing permanent maintained ROW by 25 feet is sufficient to safely and efficiently operate large-diameter natural gas pipelines. Therefore, we **recommend that**:

- **EPNG should restrict the new permanent pipeline ROW width for the Loop Line to 25 feet immediately adjacent to its existing operational ROW and**

restrict the new permanent pipeline ROW width to 50 feet where the proposed loop deviates from its existing operational ROW. This permanent pipeline ROW restriction applies between approximate MPs 174.5 and 191.5, with the exception of the sand dune area between MPs 188.25 and 189.00, where a 100-foot-wide ROW is required, and the residential area between approximate MPs 189.3 and 190.7, where no additional permanent ROW is proposed.

The Project would be constructed, tested, operated, and maintained according to all applicable federal, state, and local laws, regulations, and requirements. These laws and regulations include the Natural Gas Pipeline Safety Act of 1968, as amended, the U.S. Department of Transportation's (USDOT) *Transportation of Natural Gas or Other Gas by Pipeline, Minimum Federal Safety Standards* contained in 49 CFR 192, and the Commission's regulations at 18 CFR 380.15, *Siting and Maintenance Requirements*. In accordance with 49 CFR 192, the Red Mountain and Dragoon Compressor Stations, the Loop Line, mainline valves, and pig launcher/receivers would be inspected for leaks as part of scheduled operations and maintenance.

5.1 Aboveground Facility Construction

Prior to the start of construction, EPNG would conduct a kick-off meeting to coordinate lines of communication and scheduling. All construction personnel would receive site-specific, safety and environmental training prior to mobilizing to the construction site. Prior to beginning any construction-related activities, survey crews would stake the limits of the construction work areas. Approved access routes would be clearly delineated using conspicuous temporary signage.

Prior to ground-disturbing or vegetation-clearing activities, EPNG would contact the national 811 "one-call" system so that utility companies have the opportunity to identify and mark their respective buried facilities for avoidance.

Following surveying, EPNG would remove vegetation at all permanent workspaces and in those areas necessary to support safe installation and operational activities. Any woody vegetation that requires removal would be disposed of in accordance with local regulations. EPNG would retain removed vegetation in temporary workspaces to the maximum extent practicable. EPNG would then grade the construction work areas to create level surfaces for the safe movement and operation of construction vehicles.

Within the Red Mountain and Dragoon Compressor Station construction sites, any available topsoil as practicable (up to 12 inches) would be graded, separated, and stored away from the subsoil ("topsoil segregation"). Installation of temporary erosion and sediment control measures would occur following initial ground disturbance, in

accordance with the Project ECMP further described in section B.2. The ECMP provides typical construction details for erosion and sediment control measures.

Excavation of reinforced concrete foundations would be required for the new compressor unit and buildings. The need for blasting is not anticipated. The foundation and piling/pier excavation depths would be determined upon completion of the geotechnical evaluations. Forms would be set, rebar installed, and concrete poured into the foundation settings. Random sampling of concrete pours would verify compliance with minimum strength requirements. Backfill placed against the foundations would be compacted in place, and excess soil would be used elsewhere around the site.

Once the concrete foundation has been determined to meet the design requirements, installation of the buildings and machinery for the compressor station would begin. Compression equipment would be manufactured off-site and shipped to the site by truck; the compressor equipment offloaded and positioned on the foundation, leveled, grouted, and secured. Modularized, skid-mounted buildings would house utilities supporting the operation of the gas compressor and cooling equipment.

Before start up, EPNG would inspect and test all compressor station controls and safety equipment and systems, including emergency shutdown, relief valves, gas and fire detection, and vibration.

5.2 Installation of the Loop Line

Excavation of the new 17-mile-long Loop Line trench would follow clearing and grading of the construction ROW. In general, excavation would be accomplished using ditching machines, backhoes, or rippers. EPNG would excavate to a sufficient depth to comply with USDOT regulations for depth of cover (49 CFR 192), which would generally range from 18 to 30 inches depending on soil conditions, with up to 6 feet of soil cover through areas of sand dunes. Trench spoil (subsoil) would be stockpiled separately from salvaged topsoil on the spoil side of trench. Separation between subsoil and topsoil stockpiles would be maintained throughout construction.

Procurement of the steel pipe is in nominal 40- to 80-foot lengths (joints). Stringing trucks would transport pipe joints to the ROW. The individual joints would be strung along the working side of the trench on temporary supports (skids) in preparation for subsequent bending, line-up, and welding. An on-site hydraulic pipe-bending machine would be used to conform pipe sections or joints to ground contours and directional changes in the Project alignment. Required pipe bending would be completed prior to pipe lineup and welding.

After the pipe is bent, the pipe segments would be aligned end-to-end and clamped into position. The pipeline would be welded and inspected in conformance with 49 CFR 192, Subpart E, “Welding of Steel in Pipelines,” American Petroleum Institute Standard 1104, “Standard for Welding Pipelines and Related Facilities” (latest edition), and

USDOT requirements. Welds would be visually inspected and tested for integrity using non-destructive examination methods to ensure that the assembled pipe meets or exceeds the design strength requirements. EPNG's construction contractor would develop and implement a project-specific Fire Prevention and Suppression Plan in accordance with construction procedures and industry-accepted standards to minimize the risk of fire during welding and other construction activities.

All field welds would be coated with fusion-bonded epoxy or other EPNG-approved coating. The welds would be visually and mechanically inspected, and any coating defects would be repaired prior to lowering the pipe into the trench. Side-boom tractors would be used to lift the welded pipe, position it over the trench, and lower it in to place. The pipeline and trench would be inspected to verify that the trench is free of rock or debris, that external pipe coating is not damaged, that the pipe is properly fitted and installed into the trench, and that minimum pipe cover depth can be achieved.

After the pipe is lowered into the trench, the trench would be backfilled. Previously excavated materials would be pushed back into the trench using bladed equipment, backhoes, or auger-type backfilling machines. In areas where topsoil has been segregated (e.g., the ditch and working side of the ROW, contractor/staging areas), trench subsoil would be placed in the trench first and the topsoil placed on top of the trench subsoil. To account for future soil settling, a small crown of material would be left over the trench line after backfilling.

EPNG would obtain hydrostatic test water discharge permits as required by the Texas Railroad Commission (TXRRC), New Mexico Environment Department (NMED), and Arizona Department of Environmental Quality (ADEQ), obtain the water from a municipal or commercial source, and truck the water to the site for storage in temporary tanks until needed. EPNG estimates about 1,760,000 gallons of water would be needed to conduct hydrostatic pressure testing of the Loop Line and the compressor station piping. See EA section B.3.2 for specific hydrostatic test water discharge details and discussion.

Test segments would be capped and filled with water, then pressurized for a minimum of 8 hours in accordance with USDOT regulations. Detected leaks would be repaired and the segment retested, if necessary. Hydrostatic test water would be re-used to the extent possible for the various facilities. Upon completion of hydrostatic testing, each pipe segment tested would be depressurized and dewatered. Test water would contact only new pipe; no additives are proposed.

The test water would be discharged into upland areas according to the ECMP and the hydrostatic test water discharge permit for that state. Energy dissipating devices would be used to dissipate the energy from the discharge. The rate of discharge would be monitored, and discharge lines would be securely supported and constrained at the discharge end.

Once the new segments at each Project facility have been successfully tested, dewatered, and dried, the test cap and manifold would be removed, and the tested Loop Line segment would be connected to EPNG's existing facilities.

5.3 Project Restoration and Operation

Restoration would include grading of disturbed construction work areas to match pre-construction contours and drainage patterns. Stabilization would include seeding disturbed temporary work areas within six working days of final grading, in accordance with the Project ECMP. Section B.4.1 of this EA discusses seedbed preparation and agency recommendations for seed mixes, rates, and dates. Restoration for areas that are not occupied by buildings, structures, or gravel/asphalt would include placing the segregated topsoil back onto the area and reseeding with the agency-recommended native seed mix.

EPNG would leave temporary erosion controls in place or replace them with interim erosion control measures until sufficient vegetation cover has been reestablished. Excess materials would be disposed of at a licensed commercial disposal facility in accordance with applicable laws. Construction equipment and all remaining construction debris would be removed and transported to a licensed commercial disposal facility.

Because the Loop Line is within the shrub-dominated Chihuahua Desert and adjacent to an existing pipeline ROW, EPNG does not anticipate the need to conduct regularly scheduled vegetation removal, pruning, or mowing of the permanent Loop Line ROW. Typical seed mixes to be used contain mainly grasses and forbs and are designed to achieve rapid ground cover to stabilize soils and reduce erosion from wind and water. ROW vegetation management in the arid southwest is generally conducted to remove deep-rooted plants that could provide a pathway for moisture or otherwise cause degradation of pipe coating. Therefore, it is unlikely that active management of vegetation post-construction would be necessary beyond that requested by landowners.

All proposed Project facilities would be operated, inspected, and maintained together with EPNG's existing facilities in compliance with USDOT regulations specified in 49 CFR 192, as well as applicable conditions of any Certificate that may be issued for the Project, and all other applicable federal, state, and local laws and regulations.

5.4 Special Construction Procedures

Blasting

Based on prior construction experience in the Project area, EPNG does not anticipate the need for blasting at any of the proposed Project facilities. The Loop Line route does contain a soil map unit that has shallow, hard bedrock; however, blasting is not anticipated by EPNG to be necessary at this location. The proposed compressor

station sites do not have shallow, hard bedrock that would require the use of blasting techniques to facilitate excavation of facility foundations. Additionally, none of the Project facilities have significant side slopes or steep topography that would require blasting to create level working surfaces.

Residential Areas

Approximately 1.7 miles of the proposed Loop Line route crosses through a residential development (Homestead Meadows South) located west of the city limits of El Paso, Texas. The new Loop Line would be constructed within 50 feet of 28 residential structures as it passes through this community. Of the 28 structures, 12 would be within 25 feet of the construction work area and would require special construction measures to minimize impacts on residences and surrounding areas (see discussion section B.5.1, below). EPNG's site-specific residential construction plans for structures within 25 feet of the construction work area are included in appendix C, and we invite landowners to comment on these plans.

No residences or residential structures are within 50 feet of construction work areas for the compressor station sites.

Road Crossings

The Loop Line would cross or use 39 existing public or private roads. A total of 29 unpaved roads and one paved road (Pebble Hills Drive) would be crossed using an open cut method. Nine paved roads within the Homestead Meadows neighborhood would be crossed by boring. The remaining road, Montana Avenue (Highway 180/62), would be crossed between approximate MPs 190.73 to 191.12 using an HDD.

The smaller, unpaved roads (most are privately owned) would typically be crossed by open trenching and then restored to pre-construction conditions. If an open cut road crossing requires extensive construction time, EPNG would provide an appropriate detour or other measures to permit traffic flow during construction. EPNG would, as needed for construction purposes, grade all unpaved roadway crossings up to a width of 20 feet.

Boring methods would typically involve excavating a bore pit on one side of the crossing and a receiving pit on the other side. A boring machine would then cut a shaft under the crossing using a cutting head mounted on an auger. The pipeline would then be pushed or pulled through the hole. Based on the type of soil conditions encountered during the installation of the bore, activities associated with this portion of the Project may require crews to work 24 hours a day until the bore is completed.

El Paso has requested modifications to sections III D. and IV E.1 of the FERC Plan to allow for the ability to temporarily close certain roadways if an alternative route

is provided and if the local agency approves of the road closure. We believe this to be reasonable.

HDD methods typically consist of establishing a small-diameter pilot hole along the crossing profile followed by enlargement of the pilot hole (reaming) to accommodate pullback of the lot hole is drilled using rotation cutting and/or jetting with a jetting assembly attached to the drill pipe. The pipeline would then be pulled back through the hole. EPNG expects the drilling process for the Montana Road crossing to take approximately 40 days to complete. EPNG states that the drilling portion of the operation would only occur during daylight hours and that the "pull back" of the pipe section would require 24-hour construction activities over a period of 1 to 2 days. A discussion of noise impacts from the HDD operation is provided in section B.9.3.

Construction permits for open trench, HDD, or road bores would be obtained from, and all road crossing would be conducted in accordance with Texas Department of Transportation and El Paso County requirements.

6. Operation and Maintenance

The proposed Project facilities would be owned, operated, and maintained by EPNG in compliance with USDOT regulations at 49 CFR 192, the general Terms of EPNG's FERC Gas Tariff, as well as applicable conditions of the Certificate Order issued for the Project, and applicable federal, state, and local laws and regulations. All Project facilities would periodically inspected and maintained. In addition to on-site operations and maintenance activities, the proposed compressor stations would be linked to a central control system that monitors the EPNG system operations 24 hours per day, 365 days per year.

7. Construction Schedule

EPNG anticipates beginning the contractor mobilization in October 2019, in order to have all new and modified facilities in service by July 1, 2020. Construction activities would generally take place during daylight hours (7:00 am to 7:00 pm), six days per week. Each compressor station would require a work force of approximately 110 workers, while the Loop Line would require 150 workers. Table 1 lists the estimated schedule and workforce requirements for each facility.

Table 1.
Construction Schedule and Workforce Requirements

New Facility ID	Construction			Estimated Cleanup/ Restoration Start Date	Estimated Workforce	
	Estimated Start Date	Estimated End Date	Estimated Duration		Temporary Construction Personnel	Additional Permanent Personnel
Loop Line	1/2020	06/2020	5 months	07/2020	150	0
Red Mountain Compressor Station	10/2019	06/2020	8 months	05/2020	110	1
Dragoon Compressor Station	10/2019	06/2020	8 months	05/2020	110	1

8. Land Requirements

The Project would disturb a total of about 418.4 acres of land during construction. During operation, 149.4 acres would be required for the operation of the Loop Line, 6.2 acres would be required for the Red Mountain Compressor Station, and about 6.4 acres would be needed for operation of the Dragoon Compressor Station. The remaining 256.4 acres of temporary construction areas would consist of temporary construction ROW, additional temporary workspace at road and wash crossings, contractor/pipeyards, and staging areas. All disturbed areas not used for operation of the Project facilities would be returned to pre-construction conditions. Table 2 identifies the proposed facilities and their associated land requirements.

EPNG would access the Loop Line construction area by new or existing work roads within the pipeline easement, or by public roads. Between MPs 174.5 and 189.4, EPNG would bring workers, materials, and supplies to the construction area through the Hueco Compressor Station at MP 174.5, Blackbutte Drive at MP 177.8, and through Bull Moose Road at MP 189.4. Between MPs 189.4 and 191.5, EPNG would access the construction work area from public roads. EPNG would not widen or otherwise modify any of the public roads used to access the work area. Existing work roads on the pipeline easement would be graded as necessary, and some new work roads would be constructed within the existing easement. No new access roads would be required for construction or operation the Red Mountain Compressor Station, as the existing Deming Facility roads would be used. A new access road, internal to the existing Willcox Compressor Station site, would be developed to construct and operate the Dragoon Compressor Station.

Although EPNG has identified areas where extra workspace would be required, additional or alternative areas could be identified in the future due to changes in site-specific construction requirements. EPNG would be required to file information on each of those areas for our review and approval prior to use.

Further discussion of land requirements for the Project is provided in section B.5.

Table 2.
Proposed Project Facilities

Facility	Description	County, State	Milepost(s)	Temporary Construction Land Use (acres)	Permanent Operational Land Use (acres)	Land Requirements by Project Element (acres)
Loop Line	17 miles of new pipeline	El Paso and Hudspeth, TX	174.5-191.5	0	109.07	109.07
	New mainline valve No. 20-3/4 and pigging facility	El Paso, TX	174.5	0	0.14	0.14
	New mainline valve No. 23 and pigging facility	Hudspeth, TX	191.5	0	0.19	0.19
	Temporary construction ROW	El Paso and Hudspeth, TX	174.5-191.5	27.9	0	27.9
	Shared ROW with EPNG Lines 1100 and 1103 (existing ROW Work Area [ERWA])	El Paso and Hudspeth, TX	174.5-191.5	48.8	12.2	57.0
	Temporary workspace at road and wash crossings	El Paso and Hudspeth, TX	Variable (see Table 8.3 in RR8)	18.4	0	18.4
	Contractor/pipe yards	El Paso, TX	Off-site	24.7	0	24.7
	Staging Areas	El Paso and Hudspeth, TX	188.0 and 174.5	13.5	0	13.5
	Access roads	El Paso and Hudspeth, TX	Variable between 174.5 and 191.5	0.3	27.8	28.1
	Total Land Use (Loop Line)			129.6	149.4	279.0
Red Mountain Compressor Station	New compressor station, necessary auxiliary equipment	Luna, NM	305.3	72.0	6.2	78.2
	Total Land Use (Red Mountain Compressor Station)					78.2
Dragoon Compressor Station	New compressor station, access road, and necessary auxiliary equipment	Cochise, AZ	406.9	54.8	6.4	61.2
	Total Land Use (Dragoon Compressor Station)					61.2

* Totals may not add up due to rounding.

9. Non-Jurisdictional Facilities

Under Section 7 of the NGA, the Commission is required to consider, as part of its decision to authorize jurisdictional facilities, all factors bearing on the public convenience

and necessity. The primary jurisdictional facilities for the Project are the 17-mile-long Loop Line and the two compressor stations.

Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of the Commission. These non-jurisdictional facilities may be integral to the need for the proposed facilities (e.g., a gas-fueled power plant at the end of a jurisdictional pipeline) or they may be minor, non-integral components of the jurisdictional facilities that would be constructed and operated as a result of the proposed facilities.

The new compressor station facilities would require installation of new power and telephone lines and new potable water lines. For the Red Mountain Compressor Station, electrical, telephone, and water lines already connect to the former Deming Station facilities and currently serve the on-site office facility. EPNG would extend these lines within the station site over to the new Red Mountain facility. Based on the utility routes and site conditions, EPNG anticipates that no environmental permits would be required for the installation/extension of these non-jurisdictional facilities to the new compressor station site.

Similarly, at the Dragoon Compressor Station, EPNG would extend water and electrical service currently serving the Willcox Compressor Station. Sulphur Springs Valley Electric Cooperative would permit, construct, own, and operate the extended powerline. Similarly, a new overhead telephone line would be constructed from existing telephone facilities at the Willcox facility to the Dragoon Compressor Station. Potable water would be drawn from the existing well that currently services the Willcox Compressor Station.

Electrical power would also be required at the Mainline Valve 23 and 23 3/4 sites. Because there is electric power to the existing Line No. 1100 and Line No. 1103 facilities at these valve locations, these existing electrical facilities would be used to service these sites.

The limits of disturbance associated with the extension of these utilities to the new compression and Mainline Valve facilities would be within the temporary workspaces required for the compressor station or pipeline construction and thus no new land disturbance would be necessary for construction of these utilities.

10. Public Review and Comment

On June 8, 2018, the Commission issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed EPNG South Mainline Expansion Project and Request for Comments on Environmental Issues* (NOI). The NOI was sent to affected landowners; federal, state, and local government agencies; elected officials; environmental and public interest groups; Native American tribes; other interested parties; and local libraries and newspapers.

In response to the NOI, the Commission received comments from El Paso Water, the Ysleta del Sur Pueblo Tribe, and the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) New Mexico and Arizona state offices. El Paso Water requested that EPNG review its plans with El Paso Water to avoid conflict with water mains and appurtenant structures in the Homestead Meadows neighborhood. The Ysleta del Sur Pueblo Tribe stated that it had no comments or concerns with the proposed Project, but requested consultation in the event that any human remains or artifacts are unearthed during Project construction. D'Andre Yancey, State Soil Scientist with the NRCS Arizona State Office, commented that the Dragoon Compressor Station site does not include prime or agricultural farmland, and therefore is exempt from review under the national Farmland Protection Policy Act. The New Mexico State NRCS Office stated it had no comments on the proposed Project.

11. Permits

A number of federal, state, and local regulatory agencies have permit or approval authority or consultation associated with the proposed Project. Table 3 provides a list of permits and consultations necessary for the Project, the applicable local, state, and federal agencies, as well as any responses received to date. EPNG would be responsible for obtaining all permits and approvals required for construction and operation of the Project, regardless of whether they appear in the table.

Table 3.
List of Permits and Approvals

Agency	Permit / Approval / Consultation	Actual Date (Anticipated)	
		Submittal	Approval
Federal Energy Regulatory Commission	Natural Gas Act, Section 7(c) – Certificate of Public Convenience and Necessity	04/2018	TBD
U.S. Army Corps of Engineers	Clean Water Act, Section 404, Nationwide Permit 12 (impacts likely below requirement for Agency Notification)	N/A	N/A
U.S. Fish and Wildlife Service	Consultations for impacts on federally listed threatened and endangered species and critical habitat under Section 7 of the Endangered Species Act, the Migratory Bird Treaty Act, the Bald and Gold Eagle Protection Act, and the Fish and Wildlife Coordination Act	01/23/18	By letter dated May 10, 2018, the U.S. Fish and Wildlife Service states its agreement with EPNG determination that the proposed Project will have no effect on listed species or critical habitat.
Texas Historical Commission State Historic Preservation Office	National Historic Preservation Act (NHPA), Section 106 Consultation	03/15/2018	04/17/18
Texas Railroad Commission	HDD rules and regulations	(3rd quarter 2018)	(4th Quarter 2018)
Texas Railroad Commission	Clean Water Act, Section 402 National Pollutant Discharge Elimination System Water Pollution Control Permit and De Minimus permit for Hydrostatic Testing Water	(3rd Quarter 2018)	(4th Quarter 2018)
Texas Department of Transportation, El Paso District	Encroachment Permit for HDD	(3rd Quarter 2018)	(4th Quarter 2018)
New Mexico Environment Department	Air Quality Permit	03/15/2018	(4th Quarter 2018)
New Mexico Energy, Minerals, and Natural Resources Department Oil Conservation Division	National Pollutant Discharge Elimination System (NPDES) Hydrostatic Test Water Discharge Permit	Prior to construction	TBD
U.S. Environmental Protection Agency – Region 6	Section 402 Clean Water Act, NPDES Construction General Permit for Stormwater Discharges and Notice of Intent	Prior to construction	TBD
New Mexico Department of Cultural Affairs, Historic Preservation Division	NHPA, Section 106 consultation	03/15/2018	03/28/18
Arizona Department of Agriculture	Notice of Intent to Clear Land of Protected Native Plants	(1st quarter 2019)	30 days automatic
Arizona Department of Environmental Quality, Water Quality Division	Section 402 Clean Water Act, NPDES		
Arizona Game and Fish Department	Special Status Species and Sensitive Communities Consultation/Project Evaluation	April 2018	04/14/18
Arizona Department of Environmental Quality, Air Quality Division	Class I, Minor Modification air quality permit	April 2018	(4th Quarter 2018)
Arizona State Parks, State Historic Preservation Office	NHPA, Section 106 consultation	03/15/2018	04/12/18

B. ENVIRONMENTAL ANALYSIS

The following sections discuss the Project's potential direct and indirect impacts on environmental resources[7]. When considering environmental consequences, the duration and significance of any impacts may be temporary, short-term, long-term, or permanent. Temporary impacts generally occur during construction, with the resources returning to pre-construction conditions almost immediately. Short-term impacts could continue for up to 3 years following construction. Long-term impacts would require more than 3 years to recover, but eventually would recover to pre-construction conditions. Permanent impacts occur when activities modify resources to the extent that they would not return to pre-construction conditions during the life of the Project, such as with the construction of an aboveground facility. An impact would be considered significant if it would result in a substantial adverse change in the physical environment.

1. Geology

1.1 Physiographic Setting and Geologic Conditions

The Project is within the Mexican Highland section of the Basin and Range physiographic province, a region characterized by broad valleys and basins separated by isolated mountains and mountain ranges. Many of the basins are deep, containing up to 8,000 feet of poorly lithified, porous, and permeable sand and gravel (Spencer, 2005).

The Loop Line is within the Hueco Bolson basin, a large, fault-bounded structural, intermontane basin that is bound on the east by the Hueco Mountains. The Rio Grande River flows through the basin. The underlying geology of the Hueco Bolson basin consists of Quaternary-age colluvium, with alluvial fan deposits under the southern portion of the Loop route (Bureau of Economic Geology, 1979) and variable-thickness sand deposits under the northern portion of the route (Stoeser et al., 2005). Local relief along the Loop Line is approximately 470 feet, with elevations ranging from approximately 4,030 to 4,500 feet above mean sea level.

The Red Mountain Compressor Station is in the western part of the Mimbres Basin on the southeastern piedmont of the Big Burro Mountains, which consist of Precambrian intrusive rocks (Gillerman, 1970). The surficial geology underlying the Red Mountain Compressor Station is Quaternary-age piedmont alluvium (Green and Jones, 1997). The Red Mountain Compressor Station location is approximately 4,430 feet above mean sea level with a very slight slope to the southeast.

[7] The analysis which follows assumes that EPNG constructs and operates its facilities as described in its application. If the Commission adopts the recommended condition presented in section A.5 regarding ROW width, there may be a slight reduction in long-term vegetation, wildlife, and land use impacts during operation and maintenance of the Loop Line ROW.

The Dragoon Compressor Station is in the central part of the Sulphur Springs Valley in the Willcox Basin, which is a hydrologically and topographically closed basin that drains to the Willcox Playa, an ephemeral lake. The surficial geology underlying the Dragoon Compressor Station is Tertiary period alluvial and aeolian deposits (Arizona Geological Survey, 2000). The Dragoon Compressor Station location is approximately 4,460 feet above mean sea level with very gentle slope to the west-southwest.

1.2 Mineral and Non-Mineral Resources

No mineral or non-mineral resources, active or inactive mines, sand/gravel pits, or quarries were identified within 0.5 mile of the Red Mountain Compressor Station or the Dragoon Compressor Station sites (U.S. Geological Survey [USGS], 2003). No known oil and gas extraction wells were identified within 1 mile of either compressor station site (New Mexico Oil Conservation Division, 2018; Rauzi, 2012). Therefore, construction and operation of the compressor stations is not expected to impact these resources.

One inactive mineshaft and open pit mine feature (called the Old Padre Mine) is about 1,000 feet north of the proposed Loop Line at MP 174.7 (USGS, 2003). Two permitted wells were identified within 1 mile of the Loop Line route. According to the TXRRC, permitted locations are proposed well locations that have been granted a drilling permit. The available records do not indicate if the wells were drilled or if they were permitted for oil or natural gas. No known oil and gas extraction wells were identified within the Loop route (TXRRC, 2017).

1.3 Geologic Hazards

Geologic hazards are natural physical conditions that can, when present, result in damage to land and structures or injury to people. Potential geologic hazards in the Project area were determined through database searches and literature and topographic map reviews, and include seismicity (earthquakes and faults), slope stability and landslides, subsidence, flooding/scour, soil liquefaction, soil expansion, and volcanism. The proposed Project sites are not characterized by volcanic or karst conditions, or susceptible to landslides; thus, the Project would not be affected by such hazards. Seismic hazards, soil expansion, and flooding are discussed below.

Seismic Hazards

Seismic hazards include earthquakes, ground faulting, and secondary effects such as liquefaction. The three Project locations are reportedly in areas of low to moderate seismic risk. Seismic risk can be quantified by the motions experienced by the ground surface or structures during a given earthquake as expressed in terms of “g” (the acceleration due to gravity), or peak ground acceleration. The USGS has developed a series of maps for the entire United States that describe the likelihood for shaking of varying degrees to occur in a given area. The USGS indicates that the Project locations are in areas where a peak ground acceleration of 0.1 g has a 2 percent chance of being

exceeded in 50 years, and a peak ground acceleration of 0.03-0.05 g has a 10 percent chance of being exceeded in 50 years (USGS, 2014). A cluster of normal faults (Hueco Fault Zone) was identified where the Loop Line crosses Montana Avenue. However, no earthquakes have been recorded from this fault zone, and the most recent deformation is estimated to be approximately 750,000 years ago. No recorded historical or prehistoric fault zones were identified near the Red Mountain or Dragoon Compressor Station sites (USGS, 2017). No large and only a few small earthquakes have occurred within 100 miles of the three Project locations since 1887 (Advanced National Seismic System, 2017). In addition, saturated soils that could contribute to soil liquefaction are not likely to be present in the Project areas. As such, we do not anticipate seismic-related impacts on the Project.

Expansive Soil

Soil expansion occurs when soils consisting primarily of clay and silt expand as a result of increased moisture content, and shrink upon drying. Expansion and shrinking of soils due to moisture fluctuations can cause damage to concrete slabs, foundations, and other confining structures. Shrink-swell potential is the relative change in volume to be expected with changes in moisture content (NRCS, 2017). Some of the soils at the three Project sites are characterized by moderate shrink-swell potential. Soils with moderate shrink-swell potential could cause foundations to crack.

EPNG would design the aboveground facilities to ensure proper drainage to assist in the minimization of "swell" of soils following a rain event. Additionally, EPNG would construct the aboveground facilities in accordance with all applicable federal, state, and local building codes and standards. Therefore, we conclude the presence of shrink-swell soils would not adversely impact the Project facilities.

Flooding

Flooding can cause buoyancy in pipelines. Flooding can also induce lateral migration of streams and cause scour that can undermine or expose a pipeline. The Loop Line route would cross small areas designated as Federal Emergency Management Agency Flood Zone A (a special flood hazard area inundated by a 100-year flood). The pipeline would be installed below the ground surface, and the surface of the ROW restored and stabilized following construction. This would minimize environmental impacts and avoid any measurable modification of the floodplain.

A portion of the Red Mountain Compressor Station site is within the designated 100-year floodplain (Zone A) (see Figure 2 below). However, only fencing (and no other permanent structures) would be constructed within the floodplain. EPNG would obtain a Floodplain Development Permit from Luna County per the Flood Damage Prevention Ordinance 81 (Luna County, 2012), and comply with the County regulations for design, construction, and operations of the compressor station, including stormwater conveyance

and detention/retention, flood damage prevention measures. As a result of EPNG's adherence to the Luna County's requirements for construction activities in the floodplain, any impacts from the Red Mountain Compressor Station on the 100-year floodplain would not be significant. The Dragoon Compressor Station site is not within any known floodplain; therefore, this facility would not have any impact on floodplains.

Executive Order (EO) 11988 on Floodplain Management directs federal agencies to demonstrate a comprehensive approach to floodplain management. EO 11988 establishes avoidance of actions on the base of the floodplain, or the 100-year floodplain, as the preferred method for meeting these requirements. See also our discussion in section C.3 below.

1.4 Paleontology

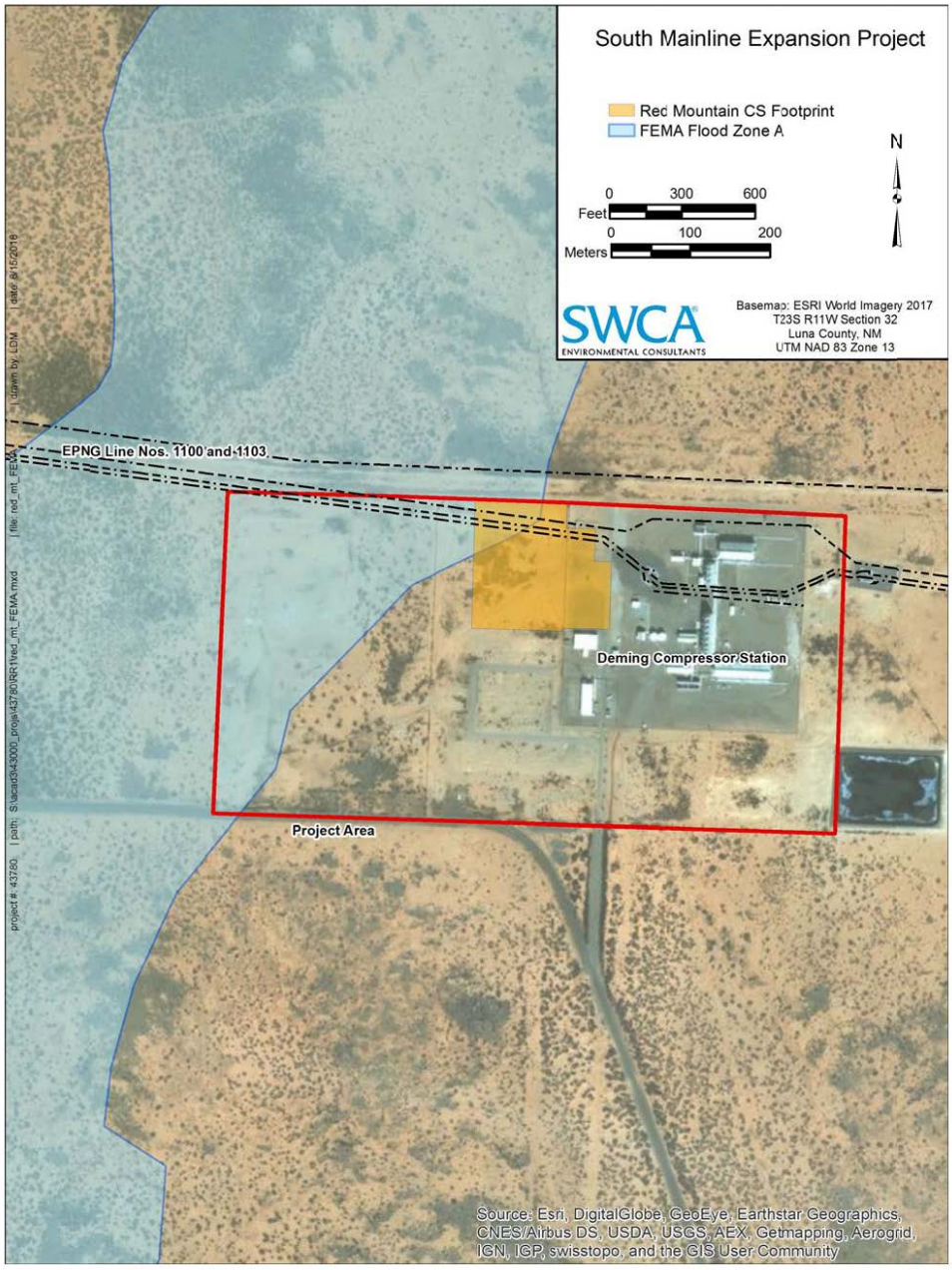
No known fossil locations were identified within the Project area based on a review of known paleontological sites. The likelihood of encountering and disturbing paleontological resources such as vertebrate fossils or scientifically significant invertebrate or plant fossils during Project construction is considered to be low due to the type of deposits (i.e., geologically young, fluvially deposited sand and alluvium) that underlie the Project areas. Thus, we conclude that significant paleontological resources are unlikely to be affected by construction or operation of the Project.

2. Soils

Information regarding the soil types and characteristics occurring in the Project area was obtained from the NRCS Soil Survey Geographic database (NRCS, 2017) which provides detailed information useful for natural resource planning and management.

Construction activities such as clearing, grading, excavation, backfilling, heavy equipment traffic, and restoration activities could result in adverse impacts on soil resources in temporary workspaces, on access roads, and at aboveground facilities. Clearing would remove protective vegetation cover and would expose soils to the effects of wind, sun, and precipitation, which could increase soil erosion and the transport of sediment to sensitive areas such as waterbodies or dry washes (also referred to as ephemeral washes). Grading and equipment traffic could compact soil, reducing porosity and percolation rates, which could result in increased runoff potential. Soil contamination from equipment spills and/or leakage of fuels, lubricants, and coolants could also impact soils. Certain practices, such as the use of EPNG's Plan, Procedures, and ECMP would help adequately minimize impacts on soils.

Figure 2: Red Mountain Station Floodplain Map



EPNG has requested a 100-foot-wide permanent easement between MPs 188.25 and 189.0 in order to have sufficient space to safely maintain and operate the Loop Line. This proposed route segment crosses a sand dune area, which during construction would require more workspace to maintain safe stable conditions due to the risk of caving and the shifting nature of the sand. In this area, the sand readily shifts under the weight of vehicles and pedestrians and is difficult to even walk on. EPNG states it may need track-mounted equipment in this area during construction.

From a construction workspace standpoint, the loose sandy soils require more space for the stockpile, larger setback of equipment from the open trench, deeper excavation for the pipeline, and less steep set-back slopes (see ROW cross-section figure in appendix A). The stockpile slope could be 1.5 horizontal to 1 vertical and could be 40 feet or wider in width. Equipment may need to be set back 20 to 30 feet from the excavation to ensure safe working conditions. EPNG would install the pipeline at a minimum cover depth of 6 feet (using a total excavation depth of 10 feet), and the excavation slope angle would be that necessary for stability and have a minimum open trench width of 36 feet. We believe this request for additional ROW due to soil conditions to be reasonable.

According to a search of federal and state databases, no reported sources of known or potential soil contamination were identified in the vicinity of the three Project areas. Therefore, no impact from contaminated soil is anticipated. Soil contamination from equipment spills and/or leakage of fuels, lubricants, and coolants could impact soils. EPNG's Project-specific ECMP addresses preventative and mitigative measures that would be used to avoid or minimize the potential impacts of hazardous material spills during construction. Measures outlined in EPNG's ECMP include, but are not limited to:

- spill prevention and response training for construction personnel;
- regular inspection of construction equipment for leaks;
- secondary containment for storage of fuels, oils, hazardous materials, and equipment;
- collection and disposal procedures for wastes generated during equipment maintenance; and
- standard procedures for excavation and offsite disposal of any soils contaminated by spillage.

The Project would not cross any actively farmed crops. No prime farmland soils would be impacted by Project activities. The soils within the Project areas are well drained, and have generally low compaction and erosion potential. Project-area soils also appear to have low revegetation potential.

Soil erosion would be mitigated through temporary erosion and sedimentation control measures and implementation of permanent measures in accordance with the EPNG's Plan and approved Project-specific ECMP. EPNG's ECMP and the FERC Plan contain measures to facilitate revegetation of disturbed areas, such as installing erosion and sediment controls immediately following initial soil disturbance; inspecting and maintaining erosion and sediment controls throughout the duration of construction and restoration; repairing or replacing erosion and sediment controls within 24 hours of identifying deficiencies; and restoring temporary disturbance areas to pre-construction contours. To reduce emissions of dust from construction activities, EPNG would follow the provisions of its Fugitive Dust Control Plan. Dust control measures include:

- using existing public and private roads and pipeline ROW for access during construction wherever possible;
- reducing vehicle speeds on unpaved roads;
- cleaning up track-out and/or carry-out areas at paved road access points;
- applying water to affected unpaved roads, unpaved haul/access roads, and staging areas (when in use);
- when appropriate, applying a water/magnesium chloride mixture as needed as a dust suppressant; and
- applying water to active construction areas as needed.

Also see section B.8.4 of this EA for additional discussion of fugitive dust impacts and control measures.

As described in section A.5, EPNG would perform topsoil stripping, where applicable, to aid in topsoil conservation and revegetation of temporary work areas and thereby minimize the disturbance of undeveloped lands. Given the Project areas' soil characteristics and the impact minimization and mitigation measures described in EPNG's ECMP and the FERC Plan, we conclude that soils would not be significantly affected by Project construction and operation.

3. Water Resources and Wetlands

3.1 Groundwater Resources

Aquifers

The Loop Line route is in the Rio Grande aquifer system, a large-scale (multi-state) regional aquifer system formed in sediments underlying portions of southern Colorado, central New Mexico, and western Texas (Robson and Banta, 1995). The principal aquifers in the Rio Grande aquifer system occur in thick deposits of basin fill in valleys bounded by mountain ranges. The basin fill material primarily consists of unconsolidated sediments of gravel, sand, silt, and clay (Ryder, 1996). Basin-fill aquifers generally have higher overall permeability (both unsaturated and saturated) relative to the surrounding bedrock, which allows for rapid infiltration of water directly from the surface.

The Loop Line route is underlain by the Hueco Basin, which is bounded by the Franklin Mountains to the west and the Hueco Mountains to the east. Groundwater in the Hueco Basin occurs under unconfined to semi-confined conditions. Groundwater recharge is derived from precipitation in the mountains surrounding the basin into alluvial fans. Aquifer discharge is by evapotranspiration, inter-basin flow, and groundwater withdrawal by wells. Inter-basin flow and evapotranspiration can be significant components of groundwater discharge as many basins are connected by basin fill in narrow valleys between basins, and due to the arid climate (high summer temperatures)

of the region. In western Texas, groundwater withdrawal from wells is the largest component of discharge from the Basin and Range aquifer system (Ryder, 1996).

Groundwater resources within the Compressor Station areas are found primarily in the Basin and Range aquifer system, a large-scale (multi-state) regional aquifer system formed in sediments underlying most of Nevada and portions of eastern California, southern Oregon and Idaho, western Utah, southern Arizona, and southwestern New Mexico (Robson and Banta, 1995). The principal aquifers in the Basin and Range aquifer system occur in thick deposits of basin fill in valleys bounded by mountain ranges. The basin fill material primarily consists of unconsolidated to semi-consolidated sediments of gravel, sand, silt, and clay deposited on alluvial fans, pediments, flood plains, and playas (Robson and Banta, 1995).

The Red Mountain Compressor Station is underlain by the Mimbres Basin, which is bounded by the Continental Divide to the north and west and by the Lower Rio Grande Basin to the east. The Dragoon Compressor Station is underlain by the Willcox Basin which is surrounded by medium-high to high-elevation mountain ranges. Groundwater in the Mimbres and Willcox Basins occur under unconfined to semi-confined conditions. Groundwater recharge is derived from precipitation in the mountains surrounding the basins and along the margins of the basins. Aquifer discharge is similar to that described for the pipeline route, but evapotranspiration is likely the largest natural component of groundwater discharge for the compressor station locations (Robson and Banta, 1995).

Under Section 1424(e) of the Safe Drinking Water Act, the U.S. Environmental Protection Agency (EPA) defines a sole or principal source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer, and for which there are no other reasonably available alternative drinking water source(s) that could physically, legally, and economically supply all those who depend on the aquifer for drinking water should the aquifer become contaminated. None of the three Project areas are within sole-source aquifers (EPA, 2018a).

Approximately 9 miles of the Loop Line route is within the Horizon Regional Municipal Utility District #2853000 (Texas Commission on Environmental Quality [TCEQ], 2018). A Municipal Utility District is a special utility district authorized by the TCEQ, typically outside of city limits, which provides infrastructure and public utilities. In addition, the entire Loop Line route is within the Groundwater Management Area 5, which consists of Hudspeth and El Paso Counties. The Loop Line route does not cross any Groundwater Conservation Districts (Texas Water Development Board, 2018).

According to the Arizona Department of Water Resources (ADWR) (2009a and 2009b) and the City of Deming (Daniel B. Stephens & Associates, 2009), the compressor stations are not within any Active Management Areas, or Irrigation Non-expansion Areas.

Private Water Wells and Springs

Based on a review of the Texas Water Development Board site (2018), the USGS National Water Information System (2018), and topographic maps and field surveys to verify the database findings, no private groundwater wells, springs, or seeps were identified within 150 feet of the Loop Line work area.

According to the USGS National Water Information System (2018), the New Mexico Office of the State Engineer Well Locations database (2018), and field surveys, no seeps or springs are present within 150 feet of the Red Mountain Compressor Station. Six groundwater wells were identified within or adjacent to the compressor station Project area. One well was listed as inactive and one well was listed as a cathodic protection well. The other four wells are owned by EPNG for industrial use.

According to the USGS National Water Information System (2018a), the ADWR Groundwater Site Inventory (2018a), the ADWR Wells 55 Registry (2018b), and field surveys, no seeps or springs occur within 150 feet of the Dragoon Compressor Station. Eleven groundwater wells owned by EPNG are within 150 feet of the Dragoon Compressor Station Project area. Five of these are listed as destroyed/unused, four wells are listed as withdrawal industrial, and two wells were listed as cathodic protection wells.

Public Water Resources and Wellhead Protection Areas

One active public water supply well was identified within 150 feet of the Loop Line route (Texas Water Development Board, 2018). Two other wells identified within 150 of the Loop route were listed as "well plugged or destroyed."

According to the New Mexico Environment Department (2018) and the ADWR (2018a and 2018b), no public water supply wells are within 150 feet of the compressor station Project areas.

Groundwater Contamination

According to a search of federal and state databases, no reported sources of known or potential groundwater contamination were identified in the vicinity of the three Project areas. Therefore, no impact from contaminated groundwater is anticipated.

Pipeline and related infrastructure construction necessitates the use of heavy equipment and associated fuels, lubricants, and other potentially hazardous substances that, if spilled, could affect shallow groundwater and/or aquifers. Accidental spills or leaks of hazardous materials associated with vehicle fueling, vehicle maintenance, and material storage would present the greatest potential contamination threat to groundwater resources. Soil contamination resulting from these spills or leaks could continue to add pollutants to the groundwater long after a spill had occurred.

Construction activities, including clearing, trench excavation, dewatering, and fuel handling, could affect groundwater in several ways. Clearing and grading would remove vegetation that provides filtration and slows surface runoff. Trenching and soil stockpiling activities would temporarily alter overland flow and groundwater recharge and could alter near-surface groundwater flows where shallow groundwater is encountered. Heavy equipment used for construction could compact the soil along the ROW and slow groundwater recharge rates. Shallow groundwater could also affect the buoyancy of the pipe, increase the potential for pipe corrosion, and cause sidewall instability during construction. However, based on available groundwater data, it is unlikely that construction activities would encounter groundwater. In the unlikely event groundwater was to infiltrate into the excavated areas, dewatering could result in localized, minor changes in the water table.

Effects from construction would likely be temporary, and the groundwater system would recover to equilibrium within a period of days to a few months. Other groundwater impacts during construction would be effectively minimized or avoided by implementing construction practices outlined in EPNG's ECMP.

Implementation of proper storage, containment, and handling procedures would effectively minimize the chance of hazardous fluid contamination of groundwater. EPNG's Project-specific ECMP addresses preventative and mitigative measures that would be used to avoid or minimize the potential impacts of hazardous material spills during construction (see discussion in section B.2 regarding soil contamination). We reviewed EPNG's ECMP, and find that implementation of these plans within adequately address the storage and transfer of fuels and hazardous materials as well as the response to be taken in the event of a spill.

In addition to the above construction practices, EPNG would coordinate with well owners and offer pre- and post-construction testing in order to document water quality and flow for all active wells within 150 feet of Project areas. If testing revealed that impacts to a well occurred as a result of Project construction, EPNG would coordinate with the well owner to provide a temporary source of water and repair or replace the impacted well.

3.2 Surface Water

The Loop Line is within the Rio Grande-Fort Quitman Watershed (Hydrologic Unit Code [HUC] 8 – 13040100). Project activities would take place in three USGS HUC 12 subwatersheds: the Phoneline Canyon-Fourmile Draw subwatershed (HUC 12 – 130401000305); the Franklin Drain-Rio Grande watershed (HUC 12-130401000203); and the Padre Canyon subwatershed (HUC 12-130401000404).

EPNG conducted a survey of surface waterbodies in the Project area between June and November 2017, and did not observe any streams, rivers, or drainage features

containing permanent water. Two livestock tanks are present along the Loop Line, at approximate MPs 187.2 and 177.1; however, neither contained any water at the time of the survey. The Loop Line crosses 20 ephemeral water bodies as shown in table 4.

Potential impacts on ephemeral features/washes include contamination from hazardous materials spills, erosion, and sedimentation. Impacts related to spills would be minimized as previously described for soils and groundwater. Erosion and sedimentation of dry washes would be minimized by implementing the crossing procedures in the ECMP. In order to prevent erosion from occurring where waterbars direct and channelize water off ROW, waterbars would be constructed to direct flow to directly into an ephemeral feature, and J-hooks and rocks would be installed at the ends of all waterbars to minimize scour.

The proposed Loop Line does not cross or otherwise impact any waterbodies considered or designated as sensitive (National Park Service, 2018; National Wild and Scenic Rivers System, 2018).

According to the EPA's Clean Water Act section 303(d) List of Impaired Waters for Texas (EPA, 2018b), no impaired or contaminated surface waters are in the Project area for the Loop Line, and one impaired water occurs more than 5 miles from the off-site contractor yard and laydown area. Therefore, the Project would not have impacts on impaired waters.

The Red Mountain Compressor Station is within an unnamed watershed within the Cow Spring Draw-Seventysix Draw watershed. The Red Mountain Compressor Station site does not contain any surface water features. The closest impaired water to the Red Mountain site is the Mimbres River, more than 25 miles to the northeast; therefore, no impacts on impaired or contaminated or impaired surface water are expected.

The Dragoon Compressor Station is within the OB Draw subwatershed subdivision of the Willcox Playa watershed. The nearest impaired water is Cave Creek, approximately 30 miles southeast of the Dragoon site; therefore, no impaired waterbodies would be impacted. The Dragoon Compressor Station site includes an ephemeral channel in the northwest corner and a concrete-lined settling pond on the western border. These features would not be impacted by Project construction or operation.

Table 4.
Ephemeral Drainages Crossed by the Loop Line

Waterbody ID*	Nearest Milepost
Wash 1	174.6
Wash 2	175.0
Wash 3	175.3
Wash 4	175.3
Wash 5	175.5
Wash 6	175.8
Wash 6	175.8
Wash 7	175.9
Wash 7	175.9
Wash 8	176.2
Wash 9	176.5
Wash 10	176.7
Wash 11	176.8
Wash 12	176.9
Wash 13	177.0
Wash 14	177.2
Wash 15	177.2
Wash 16	177.7
Wash 17	178.5
Wash 18	179.1
Wash 19	180.5
Wash 19	180.5
Wash 20 (Fourmile Draw)	183.7

During construction, clearing vegetation cover and grading could increase erosion. Compaction of soils by heavy equipment near the ephemeral drainage at the compressor station may accelerate erosion and the transportation of sediment carried by stormwater runoff into the drainage. To minimize erosion, EPNG would implement its ECMP, which includes standard measures to protect water resources, including installing, inspecting, maintaining, and repairing erosion and sediment controls; and restoring temporary disturbance areas to pre-construction contours and drainage patterns.

EPNG's Spill Prevention, Control, and Countermeasure Plan contains measures to prevent and, if necessary, control any inadvertent spill of hazardous materials such as fuels, lubricants, or solvents that could affect water quality, as well as identifies specific actions to be taken should any spills occur, including emergency notification procedures. Fuel and other hazardous materials would not be stored, and no equipment would be parked and/or refueled within 100 feet of dry washes or ephemeral streams.

Once construction is completed, EPNG would restore disturbed construction work areas to match pre-construction contours and drainage patterns. Temporary work areas would be seeded in accordance with county requirements and the Plan. Temporary erosion controls would remain in place until sufficient vegetation re-establishes on the Project sites. EPNG would also implement its approved site-specific ECMP; Stormwater Pollution Prevention Plan; and Spill Prevention, Control, and Countermeasure Plan during construction and restoration of the Project. As a result, we conclude that impacts on surface waters would be short-term and not significant.

Hydrostatic Testing

In accordance with USDOT regulations, EPNG would conduct hydrostatic testing for the Loop Line and all new compressor station piping prior to placing the facilities into service, to ensure all new pipe is capable of operating at the design pressure. Hydrostatic test water for the proposed facilities would be obtained from a municipal or commercial source and trucked to the Project site for storage in temporary mobile tanks until use. EPNG would use approximately 1,600,000 gallons of water for hydrostatic testing of the Loop Line. Compressor station piping would require considerably less water. The water in the pipe would be pressurized and held for a minimum of 8 hours and would not contain any chemical additives. EPNG would not add chemicals to the test water. If any leaks are detected EPNG would repair the piping segments and retest.

Upon completion of the hydrostatic test, water would be discharged into an upland area in accordance EPNG's Hydrostatic Testing Best Management Practices Plan and with hydrostatic test water discharge permits issued by the TXRRC, NMED, and ADEQ. The test water would be discharged using energy dissipation devices to reduce the velocity of the discharged water, thereby reducing the potential for erosion where the water is discharged. Alternatively, EPNG may discharge test water into a new evaporation pond constructed on the compressor station site.

Once the new segments at each Project facility have been successfully tested, dewatered, and dried, the test cap and manifold would be removed, and the test segment would be connected to EPNG's existing facilities.

Impacts from the withdrawal and discharge of test water would be minimized by following the requirements specified in the state hydrostatic test water discharge permits.

Impacts from the withdrawal and discharge of hydrostatic test water would be short-term and not significant.

3.3 Wetlands

The U.S. Army Corps of Engineers (USACE) defines wetlands as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of wetland vegetation typically adapted for life in saturated soil conditions." EPNG conducted wetland delineations in July, August, September, and December 2017 for all Project areas, in accordance the USACE 1987 *Wetlands Delineation Manual* (USACE 1987) and 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008). EPNG also accessed the U.S. Fish and Wildlife Service's (FWS) National Wetlands Inventory to determine if wetlands were present within the Project sites.

No wetlands were identified at any Project site during the June 2017 surveys or from the search of the National Wetlands Inventory data. Accordingly, no impacts on wetlands would result from construction and operation of the Project.

4. Vegetation and Wildlife and Special Status Species

4.1 Vegetation

The proposed Loop Line is located within the general Chihuahuan Desertscrub biotic community, and would cross 13 sub-categories of vegetation as designated by the Texas Parks and Wildlife Department (2018b). These are (with estimated acreage impact):

Native Invasive: Mesquite Shrubland (35.4 acres): Honey mesquite is often the dominant species within this category, but other important species are sweet acacia, smalls hackberry, Ashe's juniper, cedar elm, lotebush, algerita, winged elm, sumac, Brazilian bluewood, common persimmon, Texas persimmon, spiny hackberry, and Texas pricklypear. A sparse canopy may be formed by trees including Texas live oak, live oak, or post oak.

Trans-Pecos: Creosotebush Scrub (35.9 acres): Creasotebush often forms a monotypic dominant in this system that occupies large areas of the intermontane basins.

Trans-Pecos: Desert Deep Sand and Dune Grassland (0.1 acre): This type consists of stabilized dune with primarily herbaceous cover, though some woody species may be present.

Trans-Pecos: Desert Deep Sand and Dune Shrubland (51.3 acres): This system includes shrubby sites on coppice dunes associated with aeolian sands of the Trans-

Pecos. This system often results from degradation of grasslands of the North American Warm Desert Active and Stabilized Dunes or the Chihuahuan Sandy Plains Semi-Desert Grassland. Dominant plant species include honey mesquite and sand sagebrush; other woody species that may occur include soaptree yucca, tree cholla, four-wing saltbush, and jointfir. Herbaceous species of the adjacent grasslands are common.

Trans-Pecos: Desert Pavement (2.2 acres): This system consists of unvegetated to very sparsely vegetated sites on level to gently rolling, gravelly landscapes, often characterized by harsh, high temperature conditions often leading to the development of gravels coated with "desert varnish." This system may occur on alluvial flats or the level portions of bajada fans at low elevations. Widely scattered creosotebush may often be present.

Trans-Pecos: Desert Wash Barren (4.8 acres): This system consists of sandy, gravelly, or rocky stretches of desert drainages that are sparsely vegetated.

Trans-Pecos: Desert Wash Shrubland (0.3 acre): Shrub-dominated desert drainages sometimes with a sporadic emergent overstory of scattered trees.

Trans-Pecos: Lower Montane Riparian Shrubland (48.4 acres): Woodlands dominated by species such as Fremont cottonwood, Rio Grande cottonwood, velvet ash, Mexican buckeye, and netleaf hackberry.

Trans-Pecos: Desert Wash Shrubland (40.4 acres): Sparsely vegetated sites on deep sand.

Trans-Pecos: Sandy Desert Grassland (20.1 acres): This grassland or steppe occurs on sandy plains throughout the Trans-Pecos and into the arid southern portions of the High Plains. The herbaceous layer is often dominated by grasses including black grama, Mesa dropseed, sand dropseed, sand muhly, alkali sacaton, common sandbur, and purple threeawn. A scattered woody component may occur consisting of species including honey mesquite, soaptree yucca, plains yucca, Torrey's yucca, and creosotebush. The non-native species Lehmann lovegrass and Mediterranean lovegrass may also be present.

Trans-Pecos: Sparse Creosotebush Scrub (9.7 acres): This type occupies areas of the intermontane basin plains with low vegetation cover, often with desert pavement under a sparse canopy of almost monotypic creosotebush.

Urban Low Intensity (less than 0.1 acre): This type includes areas that are built-up but not entirely covered by impervious cover, including most of the area within cities and towns.

Barren (2.3 acres): This type includes areas where little or no vegetation cover existed at the time of image data collection. These areas can include large areas cleared for development; rural roads and buildings associated clearing in primarily rural areas;

streambeds with exposed gravel or bedrock, rock outcrops, quarries, and mines; and fallow fields or areas within cropland blocks that remain barren throughout one growing season or heavily grazed pastures where bare soils are dominant.

During field reconnaissance the dominant vegetation for the project area for the Loop Line route and associated access roads includes fourwing saltbush, creosotebush, honey mesquite, spike dropseed, and soaptree yucca. Dominant vegetation in the pipe yards includes broom snakeweed, prickly Russian thistle, and wooly tidestromia, with creosotebush and African rue as subdominant species. Dominant vegetation for the northern portion of the project area for the Loop Line route near Montana Avenue includes purple threeawn and broom snakeweed, with flatspine bur ragweed and low woollygrass as subdominant species.

The Red Mountain Compressor Station site is within Semisdesert Grassland biotic community, which is typically comprised of shrubland, barren areas, or remnant grassland (Brown, 1994).

Although disturbed by prior construction and operation activities, native vegetation still occurs at the proposed Red Mountain Compressor Station site, consistent with both the saline flats and alkali playa margins and desert shrub land descriptions of Chihuahuan Basins and Playas (EPA, 2018c). Vegetation observed during field reconnaissance includes threadleaf snakeweed, honey mesquite, prickly Russian thistle, soaptree yucca, fourwing saltbush, purple threeawn, forage kochia, purslane, silverleaf nightshade, devil's claw, sunflower, spectator pod, mat amaranth, small spotted sandmat, dropseed, Indian rushpea, purple pricklypear, desert globemallow, and tobosagrass.

The Dragoon Compressor Station site is entirely within the Semidesert Grassland biotic community (Brown, 1994). The site has been previously disturbed by the existing Willcox Compressor Station and by construction and removal of the former onsite residential camp. Native plant species do occur in the construction area, including perennial bunchgrasses and yuccas, which are common in Semidesert Grassland (Brown, 1994). However, Anglo settlement and livestock grazing have historically facilitated the invasion of Semidesert Grasslands by mesquite and shrubs (especially burroweed), which are also common at this site.

Vegetation observed in the Dragoon Compressor Station site is dominated by velvet mesquite and desert broom in the overstory, with burroweed and perennial bunchgrasses (primarily lovegrass) in the understory. Additional species observed included prickly Russian thistle, soaptree yucca, and jimsonweed. In addition, landscape plants are present, including juniper, Siberian elm, and sweet acacia.

No vegetation resources of special concern were identified in any of the Project areas.

Table 5 identifies the vegetation communities that would be impacted by the construction and operational of the Loop Line. During construction, 250.9 acres of vegetated land would be disturbed for all work areas, including off-site staging sites. An additional 28.1 acres of existing access road area would also be used. Of the 250.9 acres, 141.5 acres would be restored and allowed to revert to its prior condition following construction. A total of 109.4 acres would be allowed to revegetate and would be maintained as operational ROW.

Restoration of the ROW would be carried out in accordance with EPNG's ECMP and its Reclamation Plan. Disturbed areas along the pipeline route would be revegetated using a local native seed mixture developed in consultation with the local NRCS Field Office. The preferred method for applying the seed would be by drilling to a depth of up to 0.25 inch and applying straw or weed-free hay to the seeded area as mulch. Seed mixes used by EPNG in this part of the southwest contain mainly grasses and forbs such as Black grama, sideoats grama, bush muhly, and sand dropseed, which are designed to achieve rapid ground cover to stabilize soils and reduce erosion from wind and water. The grass species to be used are warm season seeds, and planting should occur at least 45 days after the last freeze or during the local monsoon season (August and September) when the soil moisture is the highest.

EPNG states that within the shrub-dominated Chihuahua Desert, it does not anticipate the need to conduct regularly scheduled vegetation removal, pruning, or mowing of the permanent 60-foot-wide Loop Line ROW, and that vegetation management would be conducted to remove deep-rooted plants that could provide a pathway for moisture or otherwise cause degradation of pipe coating.

Construction and operation of the Red Mountain Compressor Station would result in approximately 78.2 acres of temporary impacts on vegetation on lands that were previously disturbed during the construction of the previously abandoned Deming Compressor Station. The site contains native species consistent with the Chihuahuan Basins and Playas Ecoregion; however, the site contains disturbed natural vegetation, off-highway vehicle tracks, and large altered areas where the vegetation has been removed. Of the 78.2 acres, 6.2 acres would be permanently impacted and maintained for operation of the compressor station facilities. The remaining 72 acres would be temporarily cleared but would be reclaimed upon completion of construction and allowed to revert to pre-construction condition. The impacts would constitute a permanent conversion of about 6.2 acres of mostly disturbed vegetation to graded, graveled, and maintained areas used during compressor station operations. The temporary construction areas (72 acres) would be regraded and reseeded in accordance with the ECMP.

Table 5.
Vegetation Community Impacts for the Loop Line (acres)

Vegetation Community	Loop Line[1]			Off-Site Staging Areas[A]		
	Temporary Construction Impact	Permanent / Operational Impact	Existing ROW Work Area Impact	Additional Temporary Workspace Impact	Laydown Yards Temporary Impact	Ancillary Pipe Contractor Yards Temporary Impact
Native Invasive: Mesquite Shubland	1.8	10.6	18.6	2.5	0	1.9
Trans-Pecos: Creosotebush Scrub	11.0	15.1	2.4	1.2	6.1	0
Trans-Pecos: Desert Deep Sand and Dune Grassland	<0.1	0.1	<0.1	0	0	0
Trans-Pecos: Desert Deep Sand and Dune Shrubland	2.7	18.4	9.9	3.1	0	17.2
Trans-Pecos: Desert Pavement	<0.1	<0.1	<0.1	0	0	2.2
Trans-Pecos: Desert Wash Barren	0.4	3.0	1.3	0.1	0	0
Trans-Pecos: Desert Wash Shrubland	0.1	0.2	<0.1	0	0	0
Trans-Pecos: Lower Montane Riparian Shrubland	5.2	28.4	12.2	2.6	0	0
Trans-Pecos: Sand Dune	2.4	16.5	5.6	7.8	7.4	0.7
Trans-Pecos: Sandy Desert Grassland	1.8	11.5	5.5	0.9	0	0.3
Trans-Pecos: Sparse Creosotebush Scrub	2.5	5.6	1.3	0.3	0	0
Urban Low Intensity	0	<0.1	0	<0.1	0	0
Barren	0	0	0	0	0	2.3
TOTAL [B]	27.9	109.4	57.1	18.4	13.5	24.6

A Acreages do not include access roads.
B Totals may not add up due to rounding.

The construction and operation of the Dragoon Compressor Station would affect approximately 61.2 acres of native vegetation mapped as Semidesert Grassland. The existing site is highly disturbed with large portions containing no vegetation or remnants of other past uses within the site. Of the 61.2 acres, 6.4 acres would be permanently

impacted and maintained for operation of the compressor station facilities. The remaining 54.8 acres would be temporarily impacted but reclaimed upon completion of construction, and allowed to revert to pre-construction land uses. The impacts would constitute a permanent conversion of about 6.4 acres of mostly cleared and disturbed land to graded, graveled, and maintained areas for compressor station operations.

Following construction, areas cleared or otherwise disturbed and not needed for operation of the aboveground facilities would be stabilized and restored as close to pre-construction conditions as practicable. These areas would also be seeded in accordance with the ECMP, to include an approved, weed-free seed mix. EPNG's Reclamation Plan prepared for this Project outlines the reclamation process that would be implemented to mitigate temporary construction impacts within the Project area. Upland reclamation of non-agriculture land would be considered successful when vegetation within the reclaimed area supports non-noxious plants that are similar in density and cover to those growing on adjacent, undisturbed lands. Due to the existing disturbed nature of the Red Mountain and Dragoon Compressor Station sites, only minor impacts on vegetation would result from construction and operation of these facilities.

No invasive or noxious weed species were identified to be present on the Loop Line or on the Dragoon Compressor Station site. A New Mexico Class B Species, the African rue, was observed on the Red Mountain Compressor Station site. EPNG would follow its Noxious Weed Control Plan to contain the infestation and stop the further spread of this species within the site. To minimize the potential for invasive species to spread in areas where they are present and construction would occur, EPNG would implement invasive and noxious weed Best Management Practices (BMPs), including the following measures:

- ensuring all construction equipment is cleaned prior to beginning work on the Project; in addition, equipment and vehicles used to move vegetation and topsoil during Project clearing and restoration phases would be cleaned of seeds, roots, and rhizomes prior to being moved off site;
- requiring the construction contractor to use weed-free straw or hay bales for sediment barrier installations and/or mulch;
- controlling weeds within the permanently maintained ROW using manual, mechanical, or herbicide application;
- marking weed-infested stockpiles and returning topsoil and vegetation material from infested sites to areas from where they were stripped; and
- using weed-free seed mixes for post-construction revegetation.

We expect that EPNG's adherence to the above noxious weed BMPs, and its ECMP, Reclamation Plan, Noxious Weed Control Plan, and the FERC Plan, would minimize adverse impacts from the spread of noxious weeds.

With the exception of noxious weed control, vegetation maintenance (including mowing of nonagricultural lands) is not anticipated. However, EPNG may selectively remove large brush from the permanent ROW to facilitate aerial surveillance and inspection.

Construction and operation of the Loop Line and compressor stations would result in permanent, long-term, and short-term adverse impacts on vegetation. The xeric nature of desert communities results in slow vegetation growth, so the Project area is anticipated to remain relatively open with cover provided by the low-growing shrubs, half-shrubs, grasses, and forbs propagating from the seed mix or natural deposition. Restoration of cleared construction work areas would require 2 to 5 years or more to return to prior conditions. EPNG would reduce impacts on vegetation by following its ECMP and implementing restoration methods outlined in its Reclamation Plan. As a result, impacts on vegetation are not expected to be significant.

4.2 Wildlife

EPNG performed field surveys in July, August, September, and December 2017 to document the wildlife resources present within the Project area.

The proposed Loop Line is located within the Chihuahuan Desertscrub biotic community, which provides habitat suitable for a variety of terrestrial wildlife species, including birds, small mammals, and reptiles. No perennial water bodies or wetland resources were identified on the site. Several inactive bird nests (including an inactive raptor nest) and an active western burrowing owl nest were observed during the field surveys. Songbirds, raptors, turkey vultures, and game birds were observed or heard calling during the field surveys. Black-tailed jackrabbit, rock squirrels, and spotted ground squirrels were observed on the proposed Loop Line route. Two lizards (New Mexico whiptail lizard and side-blotched lizard) and one snake (coachwhip) were also observed.

The Red Mountain Compressor Station site is within Semidesert Grassland biotic community which provides habitat for a range of terrestrial wildlife species, including birds, small mammals, and reptiles. No perennial water bodies, ephemeral drainages, or wetland resources were identified on the site other than a concrete-lined industrial pond associated with the station southeast of the construction area. When containing water, this nearby off-site location may provide habitat for waterfowl or aquatic species. An active western burrowing owl burrow was observed on the site. Songbirds, one species of waterfowl (mallard), and two game bird species (scaled quail and mourning dove) were observed or heard calling during the field surveys. Black-tailed jackrabbits and two lizard species (whiptail lizard and round-tailed horned lizard) were also observed.

The Dragoon Compressor Station site, located within the Semidesert Grassland biotic community, contains areas of disturbance, including the existing, fenced Willcox

Compressor Station and the abandoned infrastructure (e.g., roads, sidewalks, powerpoles) within the former residential camp portion. Native vegetation, abandoned landscape plants, and snags provide habitat suitable for a variety of terrestrial wildlife species, including birds, small mammals, and reptiles. No perennial water bodies, ephemeral drainages, or wetland resources were identified on the site. No active or inactive bird nests were observed on the site. Songbirds were observed or heard calling during the field surveys, and one species of raptor (red-tailed hawk) was heard. A desert cottontail and a black-tailed jackrabbit were seen during field surveys, and coyote scat and tracks were observed. Two species of lizard were observed during field surveys (whiptail lizard and zebra-tailed lizard).

Wildlife Species of Special Concern

No refuges, management areas, sanctuaries, preserves, or migration routes were identified as occurring in the proposed Loop Line route (Texas Natural Diversity Database, 2017), nor does the site contain ecologically significant stream segments (Texas Parks and Wildlife Department, 2018a). The nearest Wildlife Management Area is the Sierra Diablo, more than 70 miles southeast of the Project area. The Hueco Mountains are just east and northeast of the Project area, and the Hueco Tanks State Park is approximately 7 miles north-northeast of the Project area. While these nearby areas may provide habitat for big game and other wildlife, there are no identified significant or sensitive wildlife habitats found in these locations in the vicinity of the Loop Line.

There are no significant or sensitive wildlife habitats in the Red Mountain Compressor Station area. The nearest U.S. Bureau of Land Management Herd Management Area in New Mexico is more than 100 miles northeast of the Project area, near Socorro, New Mexico. The Red Mountain Compressor Station area and vicinity are not within the core occupied elk range delineated by the New Mexico Department of Game and Fish (2016). There are no identified significant or sensitive wildlife habitats in the vicinity of the compressor station, and because this compressor site is so highly disturbed, it is unlikely to contain sufficient forage for big game species or feral equines.

There are no significant or sensitive wildlife habitats in the area surrounding the Dragoon Compressor Station. The closest Herd Management Area in Arizona is more than 100 miles northwest of the Project area, near Gila Bend. The nearest special wildlife area occurs in the Willcox Playa and Whitewater Draw Wildlife Areas that are closed to Sandhill Crane hunting, approximately 5 miles west of the Project area. Sandhill cranes winter in extreme southeast Arizona, typically in shallow lakes and rivers, irrigated croplands, pastures, wetlands, or grasslands. The Project area is unlikely to contain suitable crane habitat because it is largely disturbed and dry, and the concrete-lined pond does not contain vegetation, forage, or prey for this species. There are no additional identified significant or sensitive wildlife habitats found in these locations in the vicinity of the Project.

Construction and operation of the Project would result in short- and long-term impacts on wildlife. Short-term impacts include the displacement of wildlife from construction areas and adjacent habitats as a result of construction activities, dust, and noise. We expect that most wildlife, such as birds and large mammals, would temporarily relocate to adjacent available habitat during construction activities. Construction could result in the mortality of less mobile animals such as rodents, reptiles, and invertebrates, which may be unable to escape the immediate construction area. While wildlife species are expected to recolonize habitats, the increase in ambient noise in the immediate vicinity during construction and operation may result in a decrease in wildlife use of adjacent habitat. EPNG would implement measures to limit noise exposure during both construction and operation of the Project.

EPNG would also implement BMPs to minimize the potential for impacts on wildlife, including:

- allowing wildlife that has entered the work area to leave the area on its own;
- providing environmental awareness training to all construction personnel working on the Project;
- checking for wildlife under vehicles and equipment that have been stationary for more than 1 hour and each morning prior to moving or operation;
- complying with posted speed limits; and
- prohibiting firearms or pets at Project work sites.

Project activities would result in short and long-term impacts on mostly the Chihuahuan Desertscrub vegetation community along the pipeline ROW and the Semidesert Grassland biotic community at the two compressor station sites. Clearing and grading of the Loop Line construction work areas would temporarily remove about 250 acres of wildlife habitat and reduce protective cover and foraging habitat in the immediate Project area. Following completion of construction, these disturbed areas would be reclaimed and restored in accordance with the ECMP, but full recovery would take a number of years to accomplish.

Construction and operation of the Red Mountain Compressor Station would convert 6.2 acres of previously disturbed shrub/scrub and grassland/herbaceous habitat to Project facilities. EPNG would minimize impacts on wildlife habitat by minimizing vegetation clearing to only those areas needed to safely and efficiently construct the compressor station; and revegetating work areas that would not be permanently converted to graveled, paved, or footprints of buildings or other aboveground facilities. Similarly, construction and operation of the Dragoon Compressor Station would convert 6.4 acres of previously disturbed land to buildings or gravel pads.

In conclusion, construction and operation of the Loop Line and the compressor stations would result in long- and short- term impacts on wildlife and wildlife habitat. We conclude that with the implementation of restoration methods outlined in EPNG's ECMP and Reclamation Plan, impacts on wildlife and wildlife habitat would not be not significant.

Migratory Birds

Migratory birds are protected under the Migratory Bird Treaty Act ([MBTA] – 16 U.S. Code 703-711) and EO 13186, which serve to protect migratory birds from adverse impacts. The MBTA, as amended, prohibits the intentional taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. The executive order was enacted, in part, to ensure that environmental analyses of federal actions evaluate the impacts of actions and agency plans on migratory birds. It also states that emphasis should be placed on species of concern, priority habitats, and key risk factors, and it prohibits the take of any migratory bird without authorization from the FWS. The intentional destruction or disturbance of a migratory bird nest that results in the loss of eggs or young is also a violation of the MBTA. The bird species observed in the Project area, with the exception of Gambel's quail, scaled quail, house sparrow, and Eurasian collared dove, are protected under the MBTA.

The FWS established Birds of Conservation Concern (BCC) lists for various regions in the country in response to the 1988 amendment to the Fish and Wildlife Conservation Act, which mandated the FWS to identify migratory nongame birds that, without additional conservation actions, were likely to become candidates for listing under the ESA. No Important Bird Areas or Important Overwintering Areas have been identified or designated within or near any of the Project sites.

The Loop Line falls within Chihuahuan Desert Bird Conservation Region (BCR) 35 (North American Bird Conservation Initiative, 2014). EPNG biologists identified 34 avian species during field surveys. Several inactive bird nests were observed within the area, and an active burrowing owl nest was observed during the field visits northeast of the proposed Loop Line route at MP 187.5. In addition, suitable bird nesting substrate (trees, snags, cacti, mammal burrows, etc.) occurs in the area.

The FWS' Information for Planning and Consultation system identified 31 migratory BCC that may be potentially present in the general Project vicinity (FWS, 2017a); however, only 6 of these BCC species have the potential to occur in the Project area, based on range and habitat. Four of these species: burrowing owl, lark bunting, loggerhead shrike, and Cassin's sparrow, were observed during field surveys.

The proposed Red Mountain Compressor Station site is also within the Chihuahuan Desert BCR 35. Of the 31 BCC species known from BCR 35, 8 may occur within the Project area for the Red Mountain Compressor Station based on range and habitat; and 2

species (burrowing owl and loggerhead shrike) were observed by EPNG biologists during field surveys. Suitable bird nesting substrate (e.g., trees, snags, and cacti, etc.) is present at the site; however, the portions that have been previously cleared and developed (i.e., graveled areas within the abandoned Deming Compressor Station) do not contain ideal nesting habitat.

The proposed Dragoon Compressor Station site is located within the Sierra Madre Occidental Bird Conservation Region 34 (BCR 34). Habitat for foraging, breeding, or dispersal of 37 BCC species may occur in the general area of the Dragoon Compressor Station, though only 9 of these species would be expected at the specific Project site, based on range or habitat. EPNG biologists identified four avian species (none BCC) during field surveys. No active bird nests were observed during the field visits; however, suitable bird nesting substrate (e.g., trees, snags, and cacti, etc.) is found in the Dragoon Compressor Station site.

Removal of vegetation that provides migratory bird habitat could potentially result in inadvertent effects to nesting adults and nests, including those with eggs and/or young, if present. To the extent possible, EPNG would remove vegetation prior to the nesting season to discourage birds from establishing nests in those areas. Should construction occur during the nesting season, a qualified EPNG biologist would conduct nesting surveys (including for the burrowing owl) prior to any ground disturbance. If an active nest is located before or during construction, EPNG would consult with the FWS and take measures to avoid destroying the nest. Because EPNG has committed to consulting with the FWS to develop procedures to minimize impacts on the nesting birds, we conclude the Project's impacts on migratory birds would not be significant.

EPNG biologists observed no bald or golden eagles or their nests during field surveys. Bald eagles are not likely to occur in the Project area as because their habitat requirements (i.e., large bodies of water close by) are not found in any Project area. Golden eagles may occur in the all of the Project areas, and there are occurrence records for this species within 3 miles of the Dragoon Compressor Station site (Arizona Heritage Geographic System, 2017) and occurrence records in the vicinity of the Loop Line and Red Mountain Compressor Station. Although this species may use Project areas as foraging habitat, none of the areas is likely to be used as nesting habitat. Golden eagles typically nest in mountainous areas at elevations above 4,000 feet above mean sea level on suitable rock ledges, nesting trees, or transmission towers (AGFD, 2018). The Project would permanently impact several relatively small areas of potential foraging habitat, compared with the territory of an individual golden eagle (22–55 square miles). Because of the vast amount of suitable foraging the short duration of the Project activities, the Project is also unlikely to impact golden eagles' potential foraging resources. We do not anticipate the Project would adversely impact bald or gold eagles.

4.3 Special Status Species

Special status species are those species for which state or federal agencies provide an additional level of protection by law, regulation, or policy. Included in this category are federally listed species that are protected under the ESA, species considered as candidates for such listing by the FWS, and those species that are state-listed as threatened, endangered, or otherwise considered sensitive.

Section 7(a)(2) of the ESA requires the Commission to ensure that any action it authorizes would not jeopardize the continued existence of federally listed or proposed listed species, or result in the adverse modification or destruction of critical habitat for federally listed and proposed species. As the lead federal agency for the EPNG South Mainline Expansion Project, FERC is responsible for ESA consultation with the FWS to determine whether any proposed or federally listed species, or critical or proposed critical habitat may occur in the Project area, and to determine the Project's potential impacts on these species and critical habitat. Species classified as candidates for listing under the ESA do not currently carry regulatory protection but are typically considered during our assessments as they may be listed in the future. Similarly, species protected under state statutes do not carry regulatory protection under the ESA, but impacts are reviewed if the applicable agency indicates its potential presence in the Project area.

Federally Listed Species

EPNG utilized the FWS' Information for Planning and Conservation (IPaC) system and the AGFD's Heritage Geographic System (2017), both online environmental review tools, to determine whether any federally or state-listed threatened or endangered species, species of concern, or designated critical habitats occur in the Project area, including the ancillary contractor and pipe storage yards. EPNG prepared a biological evaluation for the Project and provided it to the FWS for review on January 22, 2018. A summary table identifying the federally listed species that may occur in the general vicinity of the South Mainline Project facilities, their habitat requirements, potential for occurrence, and possible effects of the Project is provided in appendix B.

Of the 10 species listed for Hudspeth and El Paso Counties on the FWS IPaC list (see appendix B) none are likely to occur in the Loop Line Project area. The proposed Loop Line route does not cross the known geographic or elevational range of the 10 species, or it does not cross vegetation or landscape features known to support these species, or both. Therefore, we have determined that construction and operation of the Loop Line would have *no effect* on any of the 10 listed species or their habitats.

Four species, (beautiful shiner, Chiricahua leopard frog, Northern Aplomado falcon, and yellow-billed cuckoo) were identified by the FWS (2017b) as being within the area of the Red Mountain Compressor Station. However, none of these four species are likely to occur at the compressor station site as it is beyond the known geographic or

elevational range of the four species, or it does not contain vegetation or landscape features known to support these species, or both. Therefore, we have determined that the construction and operation of the Red Mountain Compressor Station would have *no effect* on any of the four listed species or their habitats.

The FWS provided a statewide species list for Arizona, which identified 24 federally listed species. Of these, one mammal (lesser long-nosed bat) was identified as potentially being within 3 miles of the Dragoon Compressor Station site. Currently listed as endangered, the species was proposed for delisting in January 2017, due to recovery (FWS, 2017d). This proposed site does not contain suitable forage plants (i.e., saguaros or agaves) or suitable roosting sites for the lesser long-nosed bat. The site is not within the known geographic or elevational range, or does not contain suitable vegetation or landscape features, for any of the other species listed in appendix B. Therefore, we have concluded that the construction and operation of the Dragoon Compressor Station would have *no effect* on any federally listed species, including the lesser long-nosed bat.

In addition, in a letter dated May 10, 2018, the FWS agreed with EPNG's determination that the Project would have *no effect* on any listed endangered or threatened species nor would any designated critical habitat be affected by the Project. We agree, and as such, Section 7 consultation is complete.

State-Listed Species

Four species listed as threatened or endangered by the State of Texas (Texas long horned lizard, peregrine falcon, American peregrine falcon, and mountain short-horned lizard) have the potential to occur within the Loop Line Project area (Texas Natural Diversity Database, 2017). The Loop Line Project area contains habitat suitable for these four species, and any could be present during construction and operation of the pipeline. Project construction activities may impact individuals, similar to impacts discussed above for general wildlife, but Project activity is not likely to result in significant impacts or a loss of species viability. None of the four species was observed during EPNG's biological site surveys.

The Texas Natural Diversity Database identified other species of concern (including Texas species of greatest conservation need) as occurring along the vicinity of the proposed Loop Line route. Eleven of those listed have the potential to occur in the Project area for the Loop Line. One of these species, the western burrowing owl, was observed during field surveys at approximately MP 187.5 in a cleared area just northeast of the route. Other rare species and species of concern could be present during construction or operation of the Loop Line, if their preferred habitat is present.

EPNG field surveys did not detect any state-listed wildlife or plant species in the area of the Red Mountain Compressor Station. Suitable habitat is present for the peregrine falcon and for the western narrow-mouthed toad, night-blooming cereus, and El

Paso pricklypear.

EPNG field surveys did not detect Arizona Species of Greatest Conservation Need-ranked species at the Dragoon Compressor Station site. Suitable foraging habitat for the desert box turtle was observed during field surveys, but no individuals were identified.

Project-related construction would result in a temporary reduction in species habitat. Following restoration of the Loop Line, habitat would recover over a period of 2 to 5 years based on current conditions. At the compressor stations, Project construction and operation would permanently eliminate approximately 13 acres of currently degraded habitat with buildings and other facilities.

Through implementation of its EMCP, EPNG would restore vegetation cover to its previous condition, minimize introduction or spread of exotic invasive species, minimize impacts on ephemeral washes, and use the general BMPs discussed above in the Wildlife section. We conclude the Project would not have a significant impact on any special status species.

5. Land Use and Visual Resources

Project construction would impact land use along the Loop Line, Red Mountain Compressor Station, and Dragoon Compressor Station Project sites as described below. Land use descriptions are based on land cover types derived from the National Land Cover Dataset, observations made from aerial imagery, geographic information system technology, and ground-truthing during biological and cultural resource surveys.

No designated Coastal Zone Management Areas, registered national natural landmarks (National Park Service, 2018a), designated Wilderness Areas (Wilderness Connect, 2018), Wild and Scenic Rivers (National Wild and Scenic Rivers System, 2018), or designated National Trails (National Park Service, 2018b) are within 0.25 mile of any proposed Project activities. A review of the U.S. Department of Agriculture (2018) Agricultural Conservation Easement Program database indicated that there are no Program easements or other Agricultural Land Easements along Loop Line.

Land cover types affected by the Project include:

Shrub/Scrub. Includes areas dominated by shrubs less than 5 meters tall with a shrub canopy typically greater than 20 percent of total vegetation. Also includes young trees in an early successional stage, or trees stunted from environmental conditions.

Barren Land Includes areas of bedrock, desert pavement, scarps, talus, slides, sand dunes, strip mines, gravel pits and other accumulations of earthen material. Vegetation generally accounts for less than 20 percent of total cover.

Developed, Low Intensity. Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20 to 49 percent of total cover.

Developed, Medium Intensity. Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50 to 80 percent of total cover.

Grassland/Herbaceous. Includes areas dominated by graminoid or herbaceous vegetation, generally greater than 80 percent of total vegetation. These areas are not subject to intensive management such as tilling, but can be used for grazing.

Developed, Open Space. Includes areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.

Temporary and permanent land use impacts are summarized in table 6.

Table 6.
Land Use Impacts

		Impacts in Acres (Construction / Operation)						
Facility	County, State	Developed, Open Space	Developed, Low Intensity	Developed, Medium Intensity	Developed, High Intensity	Barren Land	Shrub / Scrub	Grassland / Herbaceous
Loop Line	El Paso, TX	25.1 / 8.4	3.4/0	2.3 / 0	5.1 / 0	20.1 / 9.6	108.8 / 61.2	51.2 / 10.4
	Hudspeth, TX	0 / 1.9	0 / 0	0 / 0	0 / 0	4.3 / 2.1	21.7 / 13.1	9.1 / 2.3
Red Mountain Compressor Station	Luna, NM	0.7 / 0.0	5.3 / 0	7.5 / 0	1.4 / 0	0 / 0	57.1 / 6.2	0 / 0
Dragoon Compressor Station	Cochise, AZ	10.5 / 2.0	1.6 / 0	2.1 / 0	1.5 / 0	0 / 40	37.4 / 4.4	1.7 / 0
	Project Total	36.3 / 12.3	10.3 / 0	11.9 / 0	8.0 / 0	24.4 / 11.7	225.0 / 74.3	62.0 / 12.7

Loop Line

Project construction activities on the Loop Line would include installing approximately 17 miles of buried 30-inch-diameter pipeline from the Hueco Compressor Station (MP 174.5) to Mainline Valve 23 northwest of Homestead Meadows South at MP 191.5. The Loop Line would be buried for its entire length and tied in at either end to EPNG's existing Line No. 1100. The only aboveground appurtenances would be two new mainline valves constructed within the permanent ROW at either end of the new

Loop Line.

Land cover within the Loop Line construction work area is classified as being mostly Shrub/Scrub with a small amount of Barren Land and smaller amounts of Developed Open Space, Grassland/Herbaceous, Developed Medium Intensity, and Developed Low Intensity land uses, as shown in Table 6. The westernmost 2 miles of the Loop Line runs within an existing utility corridor through the community of Homestead Meadows South.

In Homestead Meadows South, between MP 189.3 and MP 191.1, the Loop Line construction activities would be contained within the existing 120-foot-wide EPNG easement, although additional temporary workspace would be required at MPs 189.5 and 190.8 to accommodate road bores; between MPs 190.2 to 190.3 for spoil storage; and between MP 191.1 and 191.3 for the HDD operation. The remaining 15 miles of the Loop Line is co-located in a pipeline corridor that runs primarily through undeveloped adjacent land. This area is crossed and paralleled by multiple unpaved roads and crossed by several paved roads maintained by either El Paso or Hudspeth counties. The land within the Loop Line workspace in this area was previously cleared, graded, and restored during the construction of Lines Nos. 1103 and 1100. A majority of this undeveloped land has now returned to a native Shrub/Scrub-dominated natural landscape.

There are three churches and one school within 0.25 mile of proposed Loop Line construction work areas. No Native American reservation or lands owned or controlled by private preservation/conservation groups are crossed (National Conservation Easement Database, 2018).

A review of aerial imagery indicates that there are no orchards, nurseries, specialty crops, riparian habitats, operating mines (excluding sand and gravel operations), remnant prairies, or old-growth forests within 0.25 mile of the Loop Line. No municipal solid waste sites or landfills identified within 0.25 mile of this Project site (TCEQ, 2018).

Construction activities would temporarily disturb 57.0 acres of existing ROW, as well as temporary construction ROW (27.9 acres) along the south side of the permanent ROW. Construction period impacts to land use would be adverse, but short-term, affecting approximately 251 acres of land (not including impacts associated with use of existing access roads). Following installation of the new buried Loop Line and backfilling of the trench, EPNG would reclaim the area by regrading the land to match the existing contours, and reseeding disturbed areas.

Permanent (operational) impacts on land use/land cover would occur within the new permanent ROW (approximately 109 acres). While previous land uses would be allowed to resume following completion of construction, some new use restrictions including restrictions on the placement of new structures would limit future use of the new or expanded EPNG easement between MPs 174.5 and 189.3.

During scoping, El Paso Water commented that construction of the Loop Line may affect water mains along the streets of the South Homestead Meadows residential area and requested that EPNG consult with them on the location of their facilities and the design of any water main crossings. Prior to construction, EPNG would contact Texas 811: Call Before You Dig, to identify utilities that may be present in the Loop Line construction work area.

Red Mountain Compressor Station

Land cover at Red Mountain Compressor Station site is classified as primarily Shrub/Scrub, with minor amounts of Developed Medium Intensity, and Developed Low Intensity land cover types as shown in Table 6. The land in and adjacent to this site is undeveloped, with the exception of an agricultural field just east of the site.

The Red Mountain Compressor Station site is within unincorporated Luna County, New Mexico. Luna County has not established zoning regulations in or near this site (Luna County, 2012). There are no churches, hospitals, cemeteries, or schools within 0.25 mile. The Red Mountain Compressor Station site is directly adjacent to ENPG's decommissioned Deming Compressor Station, on a 78.2-acre parcel currently owned by EPNG. The site is not located on a Native American reservation or lands owned or controlled by private preservation/conservation groups (National Conservation Easement Database, 2018) or federal, state, or local agencies.

A review of recent aerial imagery confirmed that there are no orchards, nurseries, specialty crops, operating mines, remnant prairies, or old-growth forests within 0.25 mile of the site. There are no hazardous waste sites or landfills within 0.25 mile (NMED, 2018).

Project-related activities would involve construction of the compressor station building; mainline valves; septic system and leach field; suction and discharge lines; and an access road on the EPNG parcel. Including the access road, construction activities would temporarily disturb approximately 72.0 acres of land, most of which is disturbed shrub-scrub.

Of this, about 65.8 acres would be temporarily disturbed during construction. The site would be graded to match existing contours to the extent possible, and reseeded. Site grading and reseeding would restore the temporarily disturbed areas to their native shrub-scrub land cover type. Approximately 6.2 acres would be permanently converted from shrub-scrub to a developed land, and this area would be maintained for operation of the facilities into the foreseeable future

Dragoon Compressor Station

The majority of the Dragoon Compressor Station site is classified as Shrub/Scrub as shown in table 6. This station is within unincorporated Cochise County and is zoned

as Rural (Cochise County, 2018). There are no churches, hospitals, cemeteries, or schools within 0.25 mile of the site. The proposed site would be co-located with EPNG's existing Willcox Compressor Station on a private parcel owned by EPNG. This compressor station site is not on a Native American reservation or on lands owned or controlled by private preservation or conservation groups (National Conservation Easement Database, 2018) or federal, state, or local agencies.

A review of parcel data (Cochise County, 2018) and recent aerial imagery confirmed that there are no orchards, nurseries, specialty crops, lands held in trust, operating mines, remnant prairies, or old-growth forests within 0.25 mile of the compressor station site. There are no hazardous waste sites or landfills located within 0.25 mile of the site (ADEQ, 2018).

Project-related activities would involve construction of the compressor station building; mainline valves; septic system and leach field; suction and discharge lines; and an access road on the EPNG parcel. Construction activities would disturb approximately 54.8 acres of land, most of which is disturbed shrub-scrub. Of this, about 48.4 acres would be temporarily disturbed during construction. Site grading and reseeding would restore temporarily disturbed areas to their original contours and native shrub-scrub cover type. Approximately 6.4 acres would be permanently converted from shrub-scrub to a developed land, and this area would be maintained for operation of the facilities into the foreseeable future.

5.1 Residential Land and Commercial Areas

The Loop Line is within unincorporated portions of El Paso and Hudspeth counties, which do not have specific land use zoning in place for this area. The nearest residences are located at the west end of the Project alongside the existing pipeline corridor. EPNG evaluated the proximity of residential and other buildings relative to the Project construction workspace and pipeline centerline and identified 33 potential residences or buildings within 50 feet of the proposed construction workspace. Table 7 summarizes the relative position of residences and buildings to Project workspaces and the pipeline centerline.

The locations of these structures range from the 50-foot limit of consideration to locations directly over the pipeline centerline. The 33 structures within 50 feet of the construction workspace range from 0 to 122 feet from the pipeline centerline. Of the 33 structures within 50 feet, 16 are within 25 feet of the construction workspace, requiring the development of site-specific workplans.

Table 7.
Structures Within 50 Feet of the Loop Line Construction Work Areas

Type of Building	County, State	Nearest Milepost	Position	Distance from Construction Work Area (feet)	Distance from Pipeline Centerline (feet)	<25' from Construction Work Area (Drawing #)[1]
Unknown	El Paso, TX	189.37	S. side of PROW	22	42	Yes (1)
Residence	El Paso, TX	189.42	S. side of PROW	3	22	Yes(2)
Residence	El Paso, TX	189.47	S. side of ATWS	38	61	No
Unknown	El Paso, TX	189.53	N. side of PROW	27	122	No
Residence	El Paso, TX	189.53	S. side of PROW	44	64	No
Residence	El Paso, TX	189.62	S. side of PROW	36	55	No
Unknown	El Paso, TX	189.62	N. side of PROW	45	140	No
Residence	El Paso, TX	189.67	S. side of PROW	33	53	No
Unknown	El Paso, TX	189.67	S. side of PROW	22	42	Yes (3)
Residence	El Paso, TX	189.77	N. side of PROW	38	108	No
Unknown	El Paso, TX	189.79	S. side of ATWS	20	41	Yes (4)
Unknown	El Paso, TX	189.82	N. side of ATWS	38	113	No
Unknown	El Paso, TX	189.84	S. side of ATWS	21	42	Yes (5)
Unknown	El Paso, TX	189.85	S. side of ATWS	22	43	Yes (6)
Residence	El Paso, TX	189.87	S. side of PROW	40	60	No
Residence	El Paso, TX	189.96	S. side of PROW	30	50	No
Residence	El Paso, TX	189.98	S. side of PROW	40	60	No
Residence	El Paso, TX	190.04	S. side of ATWS	4	29	Yes (7)
Residence	El Paso, TX	190.07	S. side of PROW	12	37	Yes (8)
Unknown	El Paso, TX	190.09	S. side of PROW	6	25	Yes (9)
Residence	El Paso, TX	190.10	S. side of ATWS	22	42	Yes (10)
Residence	El Paso, TX	190.13	N. side of ATWS	45	140	No
Residence	El Paso, TX	190.16	S. side of PROW	20	40	Yes (11)
Residence	El Paso, TX	190.37	S. side of PROW	30	50	No
Residence	El Paso, TX	190.51	N. side of ATWS	8	104	Yes (12)
Residence	El Paso, TX	190.52	S. side of PROW	35	55	No
Mobile Home	El Paso, TX	190.63	N. side of PROW	5	102	Yes (13)
Unknown	El Paso, TX	190.67	N. side of ATWS	35	132	No
Unknown	El Paso, TX	190.73	N. side of ATWS	37	112	No
Unfinished	El Paso, TX	190.83	S. side of PROW	0, (bore location)	7	Yes (14)
Residence	El Paso, TX	190.85	S. side of PROW	14	28	Yes (15)
Unknown	El Paso, TX	190.89	S. side of PROW	0, (bore location)	0	Yes (16)
Unknown	El Paso, TX	190.89	S. side of PROW	33	44	No

PROW – permanent right-of-way
ATWS – additional temporary workspace
1. Residential construction drawings for these locations are included in appendix C

EPNG states that all structures within its existing permanent easement would be removed, and those within the additional temporary workspace would be avoided if possible, but may be removed, relocated, or replaced in accordance with landowner negotiations. Plans showing locations where work would take place within 25 feet of a residence or structure are included in appendix C for landowners to review and comment. These plans show that structures are located within the easement or additional temporary workspace in the commercial area between MPs 190.8 and 190.9.

The Loop Line construction work area is not within a designated land use planning or zoning area and EPNG was not able to identify planned growth areas or expected future developments. However, a housing development initiative in the 1960s and 1970s established residential lots north of the Loop Line. The lots do not have utilities and are therefore undevelopable in accordance with Texas State law.

In order to minimize impacts on residents in the Homestead Meadows South neighborhood, EPNG would restrict construction activities to its existing easement between MPs 189.3 and 190.7. EPNG would also comply with the provisions of the Plan, its ECMP, and would implement BMPs including:

- EPNG would leave mature trees and landscaping within the edge of the construction work area, unless necessary for safe operation of construction equipment.
- EPNG would restore all lawn areas and landscaping within the construction work area to preconstruction conditions consistent with the requirements of the Plan and the ECMP as soon as reasonably practical after all of the trenches in the residential subdivision have been backfilled. If seasonal or other weather conditions delay restoration, EPNG would maintain and monitor temporary erosion controls including sediment barriers and mulch until conditions allow completion of restoration.
- The edge of the construction work area adjacent to any residences would be fenced for a distance of 100 feet on either side of the residence in order to restrict public access and ensure that construction equipment and materials, including the spoil pile, remain within the construction work area. In addition, EPNG would have signage in both English and Spanish at the boundaries of the work area warning “Construction Area, Unauthorized Persons- KEEP OUT.”
- EPNG would limit construction work hours to daylight hours (typically considered to be 7:00 am to 7:00 pm) from Monday-Saturday in residential areas except for hydrostatic testing activities and HDD pull back activities or unanticipated special conditions that might occur during construction (and for which FERC has approved).
- EPNG would take all measures necessary to ensure that utilities are not disrupted during construction. If the need to disrupt utilities arises, EPNG

would provide as much notice as possible to the landowner prior to the disruption.

- Landowners would be notified prior to construction activities via mail no less than 30 days prior to construction commencement. Additionally, EPNG Land/ROW personnel would be present during construction of facilities in residential areas.
- Traffic flow and emergency vehicle access would be maintained on public roadways, and traffic detail personnel and/or detour signs would be used where appropriate.
- EPNG would maintain, wherever possible, a minimum distance of 25 feet between the residence and the edge of the construction work area.

Because EPNG has identified the potential removal of structures within temporary work areas, and to ensure that property owners have adequate input to a construction activity that may result in the demolition of their structure, we recommend that:

- **Prior to construction of the Loop Line, EPNG should file with the Secretary of the Commission (Secretary), for review and written approval by the Director of the Office of Energy Projects (OEP), evidence of landowner concurrence with the site-specific construction plan near MP 190.83 or file a revised site-specific construction plan near MP 190.83 that maintains a 10 foot buffer between the aboveground structures and the additional temporary workspace.**

There are no residences or other buildings within 50 feet of the Red Mountain Compressor Station work area; the nearest residence is approximately 2 miles west of the site. The Red Mountain Compressor Station site is not within 0.25 mile of any planned or future residential or commercial developments (Luna County, 2012).

There are no residences or other buildings within 50 feet of the Dragoon Compressor Station work area, and the nearest residence is approximately 2,150 feet south of the site. No planned or future residential or commercial developments were identified within 0.25 mile of the Dragoon Compressor Station site (Cochise County, 2015).

The Project would not result in permanent affects to residential land; however, construction could result in short-term impacts on nearby residential areas. Such impacts could include increased construction-related traffic on local roads, as well as increased dust and noise. We conclude that implementation of EPNG's proposed construction methods for working in proximity to residences, its site-specific residential construction plans and commitments expressed in its responses to comments, and our recommendation above would minimize disruption on residents within close proximity to construction to the extent practicable. Further, EPNG's implementation of its ECMP would facilitate restoration along the Loop Line Segment crossing the Homestead Meadows South

residential area as soon as reasonably possible upon completion of construction.

5.2 Visual Resources

Impacts on visual and/or aesthetic resources would primarily occur during construction as a result of the presence of construction equipment. Most impacts on visual resources would be temporary; however, the construction of the new compressor station would create some minor permanent impacts on the visual landscape.

Public roadways are within view of the Loop Line and the Red Mountain and Dragoon Compressor Station sites, and the Loop Line would also be within the view of the Homestead Meadows South residential development. The construction of the Loop Line adjacent to or within the existing EPNG pipeline easement would not result in a permanent alteration of visual resources. The addition of a new compression facilities at or adjacent to the existing Deming and Willcox sites would not affect views of the area surrounding these facilities.

The Red Mountain Compressor Station site is more than 2 mile from the nearest residence, and approximately 1 mile from I-10, a public highway. Passing motorists may see the compressor building, but views would be partially obscured by existing vegetation. Plus, the view would be of short duration at highway speeds. Chihuahuan Desertscrub habitat, characterized by open stands of mesquite trees and shrubs up to 10 feet tall, and about 5,000 feet of distance between the highway and the compressor station site would provide natural visual screening. As such, EPNG does not propose additional landscape screening.

The Dragoon Compressor Station site is approximately 2,150 feet from the nearest residence. Residents may see the new compressor building along with the existing facility, but views would be partially obscured by existing native shrubs and trees (8 to 12 feet in height) that are located between the residence and the compressor station site.

EPNG would implement BMPs for the compressor stations to avoid, minimize, or mitigate potential negative effects on visual character during construction and operation. These BMPs would comply with the ECMP, and include, but are not limited to:

- maintaining the existing desert scrub vegetation buffer along the compressor station site boundaries to the extent feasible;
- painting buildings and equipment to blend into the existing natural environment; and
- placing and installing downward-facing, shielded lights to mitigate off-site exposure.

With EPNG's mitigation summarized above, visual impacts from construction and operation are expected to be minimal.

6. Socioeconomics and Environmental Justice

Project activities associated with the Loop Line would take place in El Paso and Hudspeth counties, Texas in a rural setting where low- to medium-density, single-family detached dwellings and a mix of desert and open spaces dominate the surrounding landscapes. The nearest major city near the Loop Line is the city of El Paso, about 2 miles west of the Project area, in El Paso County.

The Red Mountain Compressor Station would be located within the previously abandoned Deming Compressor Station site in Luna County, New Mexico. The proposed site is in an area of disturbed and undisturbed desert and open space, interspersed with low density, detached single-family homes. The closest city to the Red Mountain Station site is Deming, approximately 12 miles to the east.

EPNG proposes to construct the Dragoon Compressor Station within the boundaries of their existing Willcox Compressor Station in Cochise County, Arizona. The site is in a rural setting with disturbed desert being the dominant land use. Surrounding uses include low density, single-family dwellings and low density commercial buildings. The closest city to the site is Willcox, approximately 13 miles northwest of the Dragoon site.

The following sections provide the socioeconomic setting for the county, cities, and communities that may be affected by construction and operation of the proposed Project. All population data are referenced from the U.S. Census Bureau 2010 and/or 2016; and housing, income, and employment data come from U.S. Census Bureau 2015.

6.1 Population, Employment, and Housing

The Loop Line construction would occur in three municipalities in Texas: the city of El Paso, El Paso County, and Hudspeth County. El Paso has a population of 683,080 over approximately 255 square miles, and a population density of about 2,543.2 people per square mile. The majority of the proposed Loop Line route is in El Paso County, which has a population of 837,918 over approximately 1,013 square miles and a population density of 790.60 people per square mile. The southeastern portion of the proposed Loop Line route is in Hudspeth County, which has a population of 4,053 persons spread out over approximately 4,571 square miles and a population density of 0.8 people per square mile.

The city of Deming, New Mexico is approximately 12 miles east/northeast of the Red Mountain Compressor Station site and has a population of 14,488 over approximately 16 square miles (a population density of about 914.8 people per square mile). Luna County has a population of 24,450 over approximately 2,965 square miles and a population density of 8.50 people per square mile.

The city of Willcox in Cochise County, Arizona, lies approximately 13.6 miles northwest of the proposed Dragoon Compressor Station. Willcox has a population of 3,511 over approximately 6.15 square miles and a population density of about 610.89 people per square mile. Cochise County has a population of 125,770 over approximately 6,166 square miles and a population density of 21.30 people per square mile.

Table 8 provides civilian labor force statistics, unemployment rates, and major industries in the communities in the area surrounding the Project sites. El Paso County has an average civilian labor force of 1,210, representing approximately 46.8 percent of the population. The average unemployment rate in El Paso County is 8.4 percent and the average unemployment rate in Hudspeth County is 5.7 percent, compared to Texas' statewide unemployment rate of 7.0 percent. The city of El Paso has an average civilian labor force of 299,233, representing approximately 58.6 percent of the population. The average unemployment rate in the city of El Paso is approximately 8.1 percent, compared to Texas' statewide unemployment rate of 7.0 percent.

Luna County has a civilian labor force of 9,726, representing approximately 51.5 percent of the population. The average unemployment rate in Luna County is approximately 13.8 percent, as compared to New Mexico's statewide unemployment rate of 9.2 percent. The city of Deming has a civilian labor force of 5,872, representing approximately 52.9 percent of the population. The average Deming unemployment rate is approximately 18.9 percent, substantially higher than the statewide unemployment rate of 9.2 percent.

Cochise County has a civilian labor force of 47,964, representing approximately 46.4 percent of the population. The average unemployment rate in Cochise County is approximately 8.7 percent, as compared to Arizona's statewide unemployment rate of 8.9 percent. The city of Willcox has a civilian labor force of 1,516, representing approximately 54.6 percent of the population. The average unemployment rate in Willcox is approximately 9.2 percent, similar to the Arizona statewide unemployment rate of 8.9 percent.

Impacts on the local population would primarily result from the short-term influx of temporary employees during construction. EPNG anticipates that over 90 percent of the workforce could come from outside of the affected counties, based on the makeup of the construction workforce in nearby communities as referenced in table 9 below. Temporary increases in population levels would occur as workers with specialized skills move into the area. Even if the entire construction workforce for the Project comes from outside the local area, this would represent a negligible increase in the population of the communities surrounding the Project site.

Table 8.
Population and Employment

Project Element	Community	2016 Population Estimate[A]	2011–2015 Per Capita Income (USD)[C]	2011–2015 Civilian Labor Force (percent)[C]	2011–2015 Unemployment Rate (percent)[C]	Major Industries
Loop Line	State of Texas	27,862,596	$26,999	64.3	7.0	Construction, Restaurant and Food Services, Elementary and Secondary Schools, Hospitals[D]
	El Paso County	837,918	$18,880	57.7	8.4	Healthcare and Social Assistance, Retail, Educational Services[D]
	Hudspeth County	4,053	$15,990	46.8	5.7	Public Administration, Educational Services, Agriculture, Forestry, Fishing, Hunting, Accommodation and Food Service[D]
	City of El Paso	683,080	$20,154	58.6	8.1	Healthcare and Social Assistance, Educational Services, Retail[D]
Red Mountain Compressor Station	State of New Mexico	2,081,015	$24,012	59.1	9.2	Restaurants and Food Services, Elementary and Secondary Schools, Construction, Hospitals[D]
	Luna County	24,450	$15,078	51.5	13.8	Retail, Healthcare and Social Assistance, Accommodation and Food Service, Educational Services[D]
	City of Deming	14,488	$14,077	52.9	18.9	Healthcare and Social Assistance, Retail, Educational Services, Accommodation and Food Service[D]
Dragoon Compressor Station	State of Arizona	6,931,071	$25,848	59.3	8.9	Construction, Restaurants and Food Services, Elementary and Secondary Schools, Hospitals[D]
	Cochise County	125,770	$23,506	46.4	8.7	Public Administration, Healthcare and Social Assistance, Retail[D]
	City of Willcox	3,511	$18,604	54.6	9.2	Healthcare and Social Assistance, Retail, Accommodation and Food Service, Educational Services[D]

A U.S. Census Bureau, 2016
B U.S. Census Bureau, 2010
C U.S. Census Bureau, 2015
E Data USA, 2018

EPNG anticipates an average workforce of 70 people for the Loop Line Project and 55 for each compressor station throughout the duration of construction. EPNG would hire local and regional construction workers to the extent feasible, provided these workers possess the necessary skills for compressor station construction. However, if the local workforce does not possess the skills required, specialized workers would be brought in from outside the local area.

During construction, the hiring of local labor would have a net positive impact on employment in the Project area, where county and city unemployment rates range from 8 to 13 percent. The influx of construction workers may also have the added benefit of generating increased work opportunities in local service industries (e.g., restaurants, drop-off laundry services, cleaning services). Due to the anticipated small size of the work force in each Project area compared to the existing population and work force, construction period impacts on population and employment are expected to be minor. Because only two permanent employees would be hired, permanent or long-term impacts on employment are expected to be negligible.

Table 9.
Population Impacts

PROJECT ID	COMMUNITY	TOTAL CIVILIAN LABOR FORCE [A]	CONSTRUCTION PERSONNEL			ADDITIONAL OPERATIONS PERSONNEL	
			AVERAGE NUMBER	PEAK NUMBER	PERCENT CHANGE [B]	NUMBER	PERCENT CHANGE
Loop Line	State of Texas	12,371,392	70	150	0.00	0	0.00
	El Paso County	334,280			0.05		0.00
	Hudspeth County	1,121			13.38		0.00
	City of El Paso	279,392			0.05		0.00
Red Mountain Compressor Station	State of New Mexico	876,210	55	100	0.01	1	0.00
	Luna County	8,012			1.25		0.01
	City of Deming	4,649			2.15		0.02
Dragoon Compressor Station	State of Arizona	2,879,372	55	100	0.00	1	0.00
	Cochise County	42,925			0.23		0.00
	City of Willcox	1,354			7.39		0.07

A U.S. Census Bureau, 2016
B Percent change based on peak number of construction personnel

Table 10 provides an overview of the housing characteristics within the affected areas of the Project. Vacancy rate data are taken from U.S. Census Bureau (2015), and may not reflect exact current conditions. For the Loop Line, the vacancy rate for El Paso County is 8.1 percent and is 3.8 percent for Hudspeth County, compared to Texas' statewide vacancy rate of 7.8 percent. The city of El Paso has a vacancy rate for El Paso County is 8.4 percent compared to Texas' statewide vacancy rate of 7.8 percent.

Table 10.
Housing Characteristics

PROJECT ID	COMMUNITY	2011–2015 VACANT HOUSING UNITS[A]	2011–2015 VACANT HOUSING UNITS FOR RENT[A]	2011–2015 FOR SEASONAL, RECREATIONAL, OR OCCASIONAL USE[A]	2011–2015 RENTAL VACANCY RATE (PERCENT)[A]	NUMBER OF HOTELS AND MOTELS[B]	NUMBER OF MOTEL AND HOTEL ROOMS
Loop Line	State of Texas	1,156,411	55,564	244,552	7.8	-	-
	El Paso County	23,004	1,427	2,245	8.1	119	9,504[E]
	Hudspeth County	565	9	127	3.8	81	9,234[D]
	City of El Paso	19,485	1,315	1,636	8.4	119	9,504[E]
Red Mountain Compressor Station	State of New Mexico	145,962	3,959	51,211	8.3	-	-
	Luna County	1,928	50	348	5.5	35	3,990[D]
	City of Deming	713	27	101	5.6	35	3,990[D]
Dragoon Compressor Station	State of Arizona	478,452	15,081	216,209	8.6	-	-
	Cochise County	11,262	228	2,155	15.9	127	275,571[C]
	Willcox	407	0	0	20.1	12	1,368[D]

A U.S. Census Bureau, 2015
B Yellowbook, 2018 (number of "Hotels and Motels" as advertised on www.yellowbook.com). Some of these hotels and motels may be located in adjacent counties.
C Arizona Office of Tourism, 2017
D Based on an estimate of approximately 114 rooms per hotel. Statistic Brain, 2017.
E City of El Paso, 2017

For the Red Mountain Compressor Station, Luna County has a vacancy rate of 5.5 percent, compared to New Mexico's statewide vacancy rate of 8.3 percent. The city of Deming has a vacancy rate of 5.6 percent.

The Dragoon Station would be in Cochise County, which has a vacancy rate for Cochise County is 15.9 percent, compared to Arizona's statewide vacancy rate of 8.6 percent. The vacancy rate for the city of Willcox is 20.1 percent, although EPNG reports there does not appear to be any vacant houses for rent at the current time. However, we note that typically, construction workers opt for more temporary accommodations such as short-term rental units (hotels, motels, and apartments), trailers, RVs, and campgrounds, rather than houses. Availability would vary based on location and distance of Project

worksites from the temporary accommodations. Additionally, availability of temporary housing would vary based on seasonal patterns.

During construction of the Project, EPNG estimates that over 90 percent of the workforce would come from outside of the local communities, and would likely reside in such temporary housing in the towns/cities surrounding the Project sites. Locally hired workers would commute daily to the construction site from their houses.

Impacts on available housing and lodging would be temporary and would last only for the duration of construction activities (estimated at approximately 9 months). As shown in table 10, the communities in the Project area have multiple housing options to accommodate the estimated relatively small non-resident construction workforce and the two permanent personnel hired to operate the facilities. Temporary and long-term/permanent impacts on housing are expected to be negligible.

6.2 Economy

Major industry sectors in El Paso and Hudspeth Counties, Texas include retail; healthcare and social assistance; accommodation and food service; educational services; public administration; and agriculture, forestry, fishing, and hunting. The average per capita income for the City of El Paso is $20,154; El Paso County is $18,880; and Hudspeth County is $15,990. The statewide average per capita income in Texas is $26,999.

The major economic sectors in the city of Deming and Luna County, New Mexico are retail, healthcare and social assistance, accommodation and food service, and educational services. The average per capita income for the city of Deming is $14,077; and for Luna County is $15,078. The statewide average per capita income of New Mexico is $24,012.

In the city of Willcox and in Cochise County, Arizona, the major industries are retail, healthcare, accommodation and food service, and educational services. The average per capita income for the city of Willcox is $18,604 and for Cochise County is $23,506. The statewide average per capita income for Arizona is $25,848.

State, county, and community tax rates and tax revenues for 2017 are provided in table 11.

Table 11.
State Tax Rates and Revenues

PROJECT ID	COMMUNITY	2017 SALES TAX RATE (PERCENT)[A]	PROJECTED SALES TAX REVENUES (USD)	PROJECTED PROPERTY TAX REVENUES (USD)
Loop Line	State of Texas	6.25	$59,922,200,000[D]	n/a
	El Paso County	0.50	$45,250,000[E]	$153,787,490[E]
	Hudspeth County	0.00	n/a	n/a
	City of El Paso	0.00	n/a	n/a
	Special	0.50	n/a	n/a
Red Mountain Compressor Station	State of New Mexico	5.125	$10,868,600,000[B]	n/a
	Luna County	1.75	n/a	n/a
	City of Deming	3.125	$3,400,000[C]	$1,138,081[C]
Dragoon Compressor Station	State of Arizona	5.60	$6,537,786,696[F]	-[G]
	Cochise County	0.50	$1,386,264,279[F]	n/a
	City of Willcox	3.00	n/a	n/a

A Avalara, 2018
B State of New Mexico, 2017
C City of Deming, 2016
D State of Texas, 2017
E City of El Paso, 2018
F Arizona Department of Revenue, 2017
G The statewide property tax in Arizona was repealed in 1996.

n/a – not applicable

Construction Payroll and Material Purchases

Construction activities would have a net positive impact on local and regional businesses, based on our assumption that construction workers would spend as much as 20 to 30 percent of their paychecks on goods, services, and entertainment, in addition to money spent on temporary housing by non-local workers. Based on information for projects of similar size, EPNG estimates that during construction of the Loop Line, construction personnel would spend $1,200,000 for local goods and services. Construction personnel for the Red Mountain Compressor Station and the Dragoon Compressor Station are estimated to spend roughly between $1,400,000 to $2,100,000 for local goods, services, and entertainment per project component. Local and/or regional businesses would also see increased revenues from construction material and equipment fuel purchases.

Tax Revenues

Construction and operation of the Project would result in long-term increases in tax revenues for the respective states and counties, in addition to other local taxing

authorities. Once in operation, EPNG estimates that annual sales tax revenues associated with the Loop Line would be approximately $9,063 based on an annual operation and maintenance budget of $125,000 and a sales tax rate of 7.25 percent (see table 11 for sales tax rates). EPNG estimates that it would pay approximately $999,057 in property taxes for the Loop Line each year (see table 12).

Table 12.
EPNG-Estimated Property Taxes

PROJECT ID	TOTAL ESTIMATED CAPTIAL EXPENDITURE	ESTIMATED VALUE/MILE	ASSESSED VALUE	TAX RATE	ESTIMATED 2021 TAXES	EFFECTIVE AD VALOREM TAX RATE
Loop Line	$40,000,000	$2,101,106	$33,932,868	0.0294	$999,057	0.025
Red Mountain Compressor Station	$40,000,000	n/a	$9,332,400	0.0233	$217,186	0.0054
Dragoon Compressor Station	$40,000,000	n/a	$3,400,128	0.1590	$540,652	0.0135

Source: EPNG

Once in operation, EPNG estimates that annual sales tax revenues associated with the Red Mountain Compressor Station would be approximately $25,000 based on an annual operation and maintenance budget of $250,000 and a sales tax rate of 10 percent. EPNG estimates that annual property tax payments for the Red Mountain Compressor Station would be $217,186.

EPNG estimates that annual sales tax revenues associated with the operation of the Dragoon Compressor Station would be approximately $22,750 based on an annual operation and maintenance budget of $250,000 and a sales tax rate of 9.10 percent and EPNG estimates that the Dragoon Compressor Station would result in $540,652 in property taxes.

6.3 Public Services

Construction of the Project could result in a temporary increased demand on local public services, such as medical, fire, police, and education services (see table 13). Potential temporary impacts on services could include traffic-related incidents, medical emergencies, increases in traffic violations, and issuances of permits for construction vehicles subject to load and width restrictions. During construction, up to 150 workers for the Loop Line and up to 100 workers combined for the Red Mountain and Dragoon Compressor Stations would be present during peak construction periods. Non-local workers would likely obtain housing in the surrounding communities; however, it is unlikely that all personnel would locate into a single community or municipality.

Table 13.
Public Services in the Project Area and Surrounding Communities

PROJECT ID	COMMUNITY	NUMBER OF PUBLIC SCHOOLS[A]	NUMBER OF SHERIFF'S DEPARTMENTS[B]	NUMBER OF POLICE DEPARTMENTS[B]	NUMBER OF FIRE AND RESCUE DEPARTMENTS[C]	NUMBER OF HOSPITALS / BEDS[D]
Loop Line	El Paso County	249	1	7	3	24 / 2,162[G]
	Hudspeth County	5	1	0	0	0, 2 / 162[G]
	City of El Paso	222	0	1	1	24 / 2,162[G]
Red Mountain Compressor Station	Luna County	11	1	1	1	1 / 25[E]
	City of Deming	11	0	1	1	1 / 25[E]
Dragoon Compressor Station	Cochise County	77	2	6	7	5 / 94[G]
	City of Willcox	4	0	1	1	1 / 25[F]

A National Center for Education Statistics, 2018
B USA Cops, 2018
C USA Fire and Rescue, 2018
D US Hospital Info, 2018
E Mimbres Memorial Hospital and Nursing Home, 2018
F Northern Cochise Community Hospital, 2018
G American Hospital Directory, 2018

Impacts on medical facilities could include injuries or illnesses that may occur to construction workers. According to the U.S. Bureau of Labor Statistics, the number of recordable injuries and illnesses for the oil and gas pipeline construction industry is about 0.7 per 100 full-time workers (U.S. Bureau of Labor Statistics, 2016). Therefore, any Project-related increase in demand for medical facility services would not be expected to exceed the capacity or level of service provided by existing medical facilities in the Project area.

Although the potential for police, fire, and medical services may increase slightly during construction activities, adequate public services exist in the Project area to handle a civil, criminal, or emergency event. Furthermore, there would be no large influx of workers. It is anticipated that the limited number of non-local construction workers would not relocate with school-age children due to the relatively short duration of construction activities. For these reasons, impacts on public services during construction are expected to be negligible.

6.4 Traffic and Transportation

Transportation systems in the Project area include a network of local, state, and federal roadways.

The Loop Line is adjacent to multiple local roads, many of which can be accessed from Texas State Highway 180/62, Conely Drive, Horizon Boulevard, or Ascencion Street. Texas State Highway 180/62, also known as Montana Avenue, is a paved, four lane, east-west highway maintained by the Texas Department of Transportation. Conely

Drive, Horizon Boulevard, and Ascencion Street are county-maintained two-lane roads. The annual average daily traffic (AADT) volumes for State Highway 180/62 near Conely Drive was 2,945 vehicles in 2016 (Texas Department of Transportation, 2016). The AADT for Conely Drive near Horizon Boulevard in 2016 was 212 vehicles. The AADT for the Ascencion Street was 2,240 vehicles and the AADT along Horizon Boulevard was 550 vehicles in 2016.

The offsite contractor/pipe yards for the Loop Line would be accessed by two private roads and a public local road (Pellicano Drive) which is a paved four-lane east-west road. The AADT along Pellicano Drive was 20,490 vehicles in 2012 near State Highway 375 and 10,557 vehicles near Berryville Street in 2015. Offsite Staging Area 1, which would be adjacent to EPNG's existing Hueco Compressor Station, would be accessed off Horizon Boulevard. Offsite Staging Area 2, located adjacent to paved Pebble Hills Road, would be accessed off Pebble Hills Road and Ascencion Street.

EPNG estimates an average of 10 trucks at two round-trips per day for trucks delivering equipment and materials, and approximately 52 other vehicles per day for construction workers commuting to the Loop Line Project area. Construction activities are anticipated to take place 6 days per week for approximately 8 months.

The Red Mountain Compressor Station site is located on an unnamed access road off exit D006 on Interstate 10 (I-10). The access road is a paved, two-lane, north-south road. I-10 is a federal highway that is a paved, four-lane highway maintained by the Federal Highway Administration. The AADT for I-10 near the D006 exit was 31,309 in 2011 (Resource Geographic Information System, 2015).

EPNG estimates an average of three round-trips per day for trucks delivering equipment and materials, and approximately 40 vehicles per day for construction workers commuting to the Red Mountain Compressor Station construction site. Construction work is expected to occur 6 days per week for approximately 8 months.

The Project area for the Dragoon Compressor Station would be accessed by Arzberger Road via Kansas Settlement Road. Arzberger Road is a paved, two-lane, east-to-west road, and Kansas Settlement Road is a paved, two-lane, north-south road. The nearest AADT information available for roadways associated with the Dragoon Compressor Station is 1,130 vehicles in 2000 at the Busenbark Road and Kansas Settlement Road intersection (South Eastern Arizona Governments Organization, 2000).

EPNG estimates an average of 3 round-trips per day for trucks delivering equipment and materials, and approximately 40 vehicles per day for construction workers commuting to the Dragoon site. Construction activities for the Dragoon Compressor Station are anticipated to occur 6 days per week for approximately 8 months.

EPNG and its contractors would use these public and private roadways to access all Project sites during construction and operation. While most of these roadways would

be existing, a new, unpaved, 30-foot-wide driveway that is approximately 0.3 mile long would be constructed from Arzberger Road to the Dragoon Compressor Station site. Before construction commences, EPNG would contact local officials regarding strategies and requirements for minimizing impacts on roadways.

The movement of construction personnel, equipment, and materials to the work areas would result in short term, minor impacts on the transportation system in the Project area. Most roadways that would be used to access the Project sites have relatively low AADT levels and Project construction working hours and deliveries would usually occur during off-peak hours. It is anticipated that workers would also be carpooling to the worksite, which would help keep Project-related traffic to a minimum. Appropriate traffic control measures, such as flagmen and signs, would be used as necessary to ensure safety of local traffic.

EPNG's construction contractor would be responsible for developing and implementing a site-specific traffic and transportation management plan for each Project site. Measures to be implemented to minimize impacts on local residents and motorists at the Project sites include:

- scheduling oversize/overweight equipment and materials deliveries to occur during non- peak traffic hours and to avoid impacts to school bus routes/schedules;
- using pilot cars for oversize/overweight equipment and material deliveries;
- installing signage and/or using flaggers at roadway turnoffs;
- maintaining access to private driveways;
- encouraging workers to carpool to the Project sites; and
- repairing roads damaged by construction activities.

EPNG would also direct its construction contractors to comply with local weight limitations and restrictions on area roadways and to remove any soil that falls from equipment onto roadway surfaces. Additionally, EPNG would coordinate with state and county officials to obtain all necessary permits for temporary construction-related impacts on roadways in the area. As a result of these measures, traffic is not expected to be significantly impacted by construction of the Project. Based on the temporary and short-term potential traffic interruptions, we conclude that impacts from Project-related construction traffic would be minor.

EPNG estimates that only one new worker would be hired to operate the new facilities at each of the two compressor stations. However, occasional site visits by operations personnel would be required for routine maintenance. The impacts on traffic and transportation routes from personnel commuting to the new compressor station facility and occasional maintenance site visits would be negligible.

6.5 Environmental Justice

For projects with major aboveground facilities, FERC regulations (18 CFR 380.12(g)(1)) direct us to consider the impacts on human health or the environment of the local populations, including impacts that would be disproportionately high and adverse for minority and low-income populations.

In its guidance for the consideration of environmental justice under NEPA, the CEQ defines a "minority" as an individual who is American Indian or Alaskan Native, Black or African American, Asian, Native Hawaiian or Pacific Islander, or Hispanic or Latino. The CEQ characterizes a "minority population" as existing in an affected area where the percentage of defined minorities exceeds 50 percent of the population, or where the percentage of defined minorities in the affected area is meaningfully greater (10 percentage points higher) than the percentage of defined minorities in the general population or other appropriate unit of geographic analysis (CEQ, 1997a; EPA, 2016). Table 14 presents the population characteristics of the Project area.

The Loop Line would be constructed in Census Tract 9503 in Hudspeth County and Census Tracts 103.39, 103.41, and 103.44 in El Paso County. The Red Mountain Compressor Station site is in Census Tract 5 in Luna County, while the Dragoon Compressor Station is contained within Census Tract 1 in Cochise County.

None of the census tracts affected by the Project have a minority population that exceeds the 50 percent minority threshold identified by CEQ, nor do they have a meaningfully greater (at least 10 percent higher) minority population than the state or the county.

Table 14.
Project Area Demographics

PROJECT ID	COMMUNITY	TOTAL POPULATION (COUNT)	WHITE	AFRICAN AMERICAN	NATIVE AMERICAN AND ALASKAN NATIVE	ASIAN	NATIVE HAWAIIAN AND PACIFIC ISLANDER	PERSONS REPORTING TWO OR MORE RACES	OTHER RACE	HISPANIC OR LATINO ORIGIN[1]	TOTAL MINORITY
Loop Line	State of Texas	26,538,614	74.9	11.9	0.5	4.2	0.1	2.5	6.0	38.4	25.2
	El Paso County	831,095	82.8	3.5	0.6	1.1	0.2	2.2	9.6	81.3	17.2
	Hudspeth County	3,330	90.7	1.3	0.0	0.8	0.0	1.9	5.4	78.4	9.4
	City of El Paso	676,325	83.7	3.7	0.5	1.2	0.2	2.2	8.5	79.9	16.3
	Census Tract 9503 (Hudspeth County)[2]	3,330	90.7	1.3	0.0	0.8	0.0	1.9	5.4	78.4	9.4
	Census Tract 103.39 (El Paso County)	9,148	79.3	3.4	0.1	0.2	0.1	3.6	13.3	84.5	20.7
	Census Tract 103.41 (El Paso County)	29,238	84.6	6.8	0.2	0.6	0.1	3.2	4.5	84.8	15.4
	Census Tract 103.43 (El Paso County)	6,993	85.3	2.3	0.4	2.2	0.0	5.2	4.6	74.1	14.7
	Census Tract 103.44 (El Paso County)	2.986	87.1	0.0	0.2	0.0	0.0	2.1	10.6	98.1	12.9
Red Mountain Compressor Station	State of New Mexico	2,084,117	73.2	2.1	9.1	1.4	0.1	3.3	10.9	47.4	26.9
	Luna County	24,789	89.5	1.2	1.5	0.4	0.1	1.7	5.7	64.1	10.6
	City of Deming	14,667	86.9	1.6	2.4	0.5	0.1	0.8	7.6	70.5	13.0
	Census Tract 5	4,625	87.9	1.4	1.8	0.3	0.0	3.0	5.6	61.5	12.1
Dragoon Compressor Station	State of Arizona	6,641,928	78.4	4.2	4.4	3.0	0.2	3.2	6.5	30.3	21.5
	Cochise County	129,647	80.0	3.9	1.2	1.7	0.2	5.8	7.3	33.9	20.1
	City of Willcox	3,639	82.9	0.7	0.0	0.0	0.0	7.0	9.4	60.0	17.1
	Census Tract 1	1,540	75.7	0.5	0.8	0.3	0.0	10.5	12.2	32.7	24.3

Source: U.S. Census Bureau, 2015

< [1] People who identify their origin as Hispanic or Latino may be of any race. Thus, the percent Hispanic or Latino should not be added to the race as percentage of population categories.

< [2] This is the only census tract in Hudspeth County; therefore, the demographics for both the county and this census tract are the same.

The CEQ guidance further recommends that low-income populations in an affected area should be identified using data on income and poverty from the U.S. Census Bureau (CEQ, 1997b). Low-income populations are populations where households have an annual household income below the poverty threshold, which is currently $24,600 for a family of four. Table 15 provides the percentage of population living below the poverty level in the Project area.

Table 15.
Percentage of Population Living Below the Poverty Level in the Project Area

Project Element	Community	Percentage of Population Below Poverty Level
Loop Line	State of Texas	17.3
	El Paso County	22.8
	Hudspeth County	40.3
	City of El Paso	20.9
	Census Tract 9503 (Hudspeth County)	40.3
	Census Tract 103.39 (El Paso County)	29.8
	Census Tract 103.41 (El Paso County)	12.0
	Census Tract 103.43 (El Paso County)	5.2
	Census Tract 103.44 (El Paso County)	29.0
Red Mountain Compressor Station	State of New Mexico	21.0
	Luna County	29.6
	City of Deming	33.1
	Census Tract 5	37.2
Dragoon Compressor Station	State of Arizona	18.2
	Cochise County	17.9
	City of Willcox	18.0
	Census Tract 1	18.2

Source: U.S. Census Bureau, 2015

None of the census tracts affected by the Project have a low income population that exceeds the 50 percent of the total population. The three Census Tracts affected by the Red Mountain and Dragoon Compressor Stations do not have a meaningfully greater (at least 10 percent higher) low income population than their respective states or the counties. Along the Loop Line, however, Census Tracts 9503 (Hudspeth County) and Census Tracts 103.39 and 103.44 in El Paso County contain a meaningfully greater population of residents living below the poverty line than their reference counties or the State of Texas. Residents in these tracts, particularly the Homestead Meadows South

neighborhood, may be affected by the construction and operation of the Loop Line. The portion of the Loop Line in Hudspeth County is in a rural, low density area with only a few, scattered residences near the construction corridor.

The types of impacts that could affect the low income population within these census tracts include air quality, noise impacts, and aesthetics. Air quality impacts from construction of the Loop Line would result in a short period of minor impacts to local ambient air quality, mainly due to exhaust from the larger construction equipment, as well as fugitive particulates from earthmoving and land filling/dumping activities, as well as traffic. These impacts are typically small and localized, as these emissions will be very near to or at ground level. Additionally, these impacts would only occur for a short period. EPNG would comply with the FERC Plan and with state regulations that address fugitive dust impacts from construction activities.

Noise from on-site construction activities that may occur near these low income populations would be limited to short durations over a period of 3 to 4 weeks at any one location based on the nature of ROW construction sequencing. These populations would not be disproportionately impacted by noise. The noise impacts from the Project would be minimized by restricting construction activities to daylight hours; equipping vehicles and equipment with mufflers; and maintaining vehicles and equipment in accordance with manufacturers' recommendations. See section 9.3 for a discussion of construction-related noise.

Aesthetically, the Loop Line is unlikely to be visible from any residence long term, as the pipeline would be buried alongside existing natural gas pipelines, thus not creating new permanent ROW. Plus, the ground surface will be restored, making any visual impacts negligible to this community. Long term impacts on land use would be avoided as the Loop Line would be installed within the existing EPNG easement through the Homestead Meadows South neighborhood.

As described throughout this EA, the proposed Project would not have a significant adverse impact on the environment or on individuals living in the Project area. Therefore, the Project would not have a disproportionately high adverse environmental or human health impact on minority or low-income residents.

7. Cultural Resources

Section 106 of the National Historic Preservation Act, as amended, requires the FERC to take into account the effect of its undertakings on properties listed, or eligible for listing, on the National Register of Historic Places (NRHP), and to afford the Advisory Council on Historic Preservation an opportunity to comment. EPNG, as a non-federal party, is assisting the FERC in meeting our obligations under Section 106 and the FERC's implementing regulations at 36 CFR 800.

EPNG completed a cultural resources survey for the Loop Line, and provided the resulting survey report to the FERC and Texas State Historic Preservation Office (SHPO). The survey employed surface inspection augmented by excavation of 609 shovel test units, and included archaeological resources and a desktop review of architectural resources. Approximately 650 acres were surveyed including a 300-foot-wide corridor for the Loop Line, extra workspace, staging/storage areas, and access roads.

As a result of these surveys, two newly recorded archaeological sites were identified including a pre-contact artifact scatter (41EP7308) and an historic artifact scatter (41HZ803). In addition, seven previously recorded sites including two pre-contact lithic scatters (41EP868 and 41HZ507), three pre-contact open campsites (41EP2379, 41EP2424, and 41EP2454), one historic artifact scatter (41HZ508), and an historic communication cable (41EP5490) were revisited. The two newly recorded sites were recommended as not eligible for the NRHP. Of the seven previously recorded sites, six were not relocated and appeared to be destroyed, while evidence of the seventh site was sparse. All were recommended as not eligible for the NRHP within the surveyed area. No historic architectural resources were identified. In a letter dated April 17, 2018, the Texas SHPO concurred and indicated that the Project would not affect historic properties. We agree.

EPNG completed a cultural resources survey for the Red Mountain Compressor Station site, and provided the resulting survey report to the FERC and New Mexico SHPO. The survey employed surface inspection, and included both archaeological and architectural resources. As a result of the survey, one historic architectural resource, the abandoned-in-place Deming Compressor Station (HCPI44264), and one archaeological site, the associated remains of the Deming Compressor Station Residential Camp (LA189480), were identified. Both were recommended as not eligible for the NRHP. In a letter dated March 29, 2018, the New Mexico SHPO concurred that site LA189480 was not eligible. However, the SHPO indicated it believed HCPI44264 to be potentially eligible, and considered it "undetermined." Because HCPI44264 would not be modified during construction of the proposed Project and the setting was industrial in nature, the SHPO indicated there be no adverse effect as a result of the Project. We agree.

The area for the Dragoon Compressor Station was previously surveyed in 2011, with one archaeological site, the remains of the Willcox Compressor Station Residential Camp (AZ CC:14:62), identified. The site was determined not eligible for the NRHP. EPNG provided this information to the Arizona SHPO, and on April 12, 2018, the SHPO concurred. We concur also.

EPNG contacted the following Native American tribes, providing a Project description, mapping, and the applicable survey report(s): Apache Tribe of Oklahoma; Comanche Nation of Oklahoma; Fort McDowell Yavapai Nation; Fort Sill Apache Tribe; Hopi Tribe; Kiowa Tribe of Oklahoma; Mescalero Apache Tribe; Pascua Yaqui Tribe;

San Carlos Apache Tribe; Tohono O'odham Nation; White Mountain Apache Tribe; Yavapai Apache Nation; Ysleta del Sur Pueblo; and Zuni Pueblo.

In a letter dated April 2, 2018, the Ysleta del Sur Pueblo indicated it had no comments, but requested to be notified of inadvertent discoveries during construction. In a letter dated April 3, 2018, the Kiowa Tribe of Oklahoma indicated the Project should have minimal potential to adversely affect any known archaeological, historical, or sacred Kiowa sites, and requested to be notified of inadvertent discoveries during construction. In a letter dated April 5, 2018, the White Mountain Apache Tribe indicated the Project would not have an adverse effect on the tribe's historic properties and/or traditional cultural properties. In a letter dated May 9, 2108, the Comanche tribe indicated "no properties have been identified." No other comments have been received. We sent our NOI to these same tribes. In a letter dated June 19, 2018, the White Mountain Apache Tribe responded and indicated the Project would not have an adverse effect on the tribe's historic properties and/or traditional cultural properties. No other responses to our NOI have been received from the tribes.

EPNG provided a plan to address the unanticipated discovery of cultural resources and human remains during construction. We requested revisions to the plan. EPNG provided a revised plan which we find acceptable.

8. Air Quality

The term "air quality" refers to relative concentrations of pollutants in the ambient air. The subsections below describe concepts that are applied to characterize air quality and to determine the significance of increases in air pollution resulting from construction and operation of the Project.

The Project would result in air emissions through short-term construction activities long-term stationary source emissions. Emissions associated with construction activities include fugitive dust from soil disruption and combustion emissions from construction equipment. Emissions from the stationary sources would be generated through normal operation of each of the proposed Dragoon and Red Mountain Compressor Stations, as well as fugitive leaks and infrequent blowdown emissions of natural gas from these facilities. Fugitive leaks from the mainline valves and pig launcher and receiver facilities at either end of the Loop Line would also emit small quantities of natural gas.

8.1 Existing Environment and Air Quality Standards

The climates in each of the Dragoon and Red Mountain Compressor Station areas are characterized by hot, humid summers and generally mild to cool winters. Temperatures range from an average low in the high 20s °F in early winter to an average high in the mid 90s °F in early summer. Summers are long and frequently hot. Winters are shorter with infrequent spells of extreme cold (National Climatic Data Center, 2017).

Federal and state air quality standards have been designed to protect human health and the environment from airborne pollutants.[8] The EPA established National Ambient Air Quality Standards (NAAQS) for seven air contaminants designated "criteria air pollutants," which are nitrogen dioxide (NO_2), carbon monoxide (CO), ozone, sulfur dioxide (SO_2), lead, inhalable particulate matter (PM) with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), and PM with an aerodynamic diameter less than or equal to 10 microns (PM_{10}). The NAAQS were established under the Clean Air Act (CAA) of 1970, as amended in 1977 and 1990, to protect human health (primary standards) and public welfare (secondary standards). The NAAQS are codified in 40 CFR 50 (EPA, 2017a).

Under the CAA, each state prepares a State Implementation Plan (SIP) to demonstrate the state's air quality management program to attain or maintain the primary and secondary NAAQS. The SIP may also include stricter standards than the NAAQS. Arizona and Texas have adopted the NAAQS as statewide standards; New Mexico sets more stringent standards for 1-hour and 8-hour CO, annual NO_2, hydrogen sulfide, lead, total suspended particulate matter, and 24-hour and annual SO_2 and adopts the NAAQS for the remaining NAAQS pollutants and averaging periods (New Mexico Air Quality Bureau, 2017).

The EPA has established Air Quality Control Regions in accordance with Section 107 of the CAA, defined as contiguous areas considered to have relatively uniform ambient air quality, and treated as single geographical units for reducing emissions and determining compliance with the NAAQS. Attainment with the NAAQS is determined based on whether or not measured ambient air pollutant concentrations are above or below the NAAQS and/or state Ambient Air Quality Standards. The SIP must include measures identifying how applicable air quality standards are achieved as well as maintained in each region. Areas of the country are designated based on compliance with the NAAQS. Designations fall under three main categories as follows: "attainment" (areas in compliance with the NAAQS); "nonattainment" (areas not in compliance with the NAAQS); or "unclassifiable" (areas lacking data to determine attainment). Areas formerly designated as nonattainment are considered "maintenance areas." The Project areas are designated as attainment or unclassifiable for all criteria pollutants. The Paul Spur/Douglas area in southern Cochise County, has both a moderate PM_{10} nonattainment area and a former SO_2 nonattainment area that was redesignated as being in attainment/maintenance in 2006; the proposed Dragoon Compressor Station site is approximately 54 miles north of this former nonattainment area. El Paso County was designated as a PM_{10} nonattainment area effective on November 15, 1990, and continues to be in nonattainment status; however, the Loop Line would be approximately 5 miles east of this nonattainment area. Therefore, all portions of the Project are within areas

[8] The current NAAQS are listed on EPA's website at https://www.epa.gov/criteria-air-pollutants/naaqs-table.

designated by EPA as attainment or unclassifiable for all criteria pollutants (EPA, 2017b).

On December 7, 2009, the EPA added greenhouse gases (GHG) to the definition of pollutant; such GHGs include carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The GHGs that would be produced by the Project are CO_2, methane, and nitrous oxide. Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride would not be emitted. Emissions of GHGs are quantified in terms of carbon dioxide equivalents (CO_2e) by multiplying emissions of each GHG by its respective global warming potential (GWP). The GWP is a ratio relative to CO_2 regarding each GHG's ability to absorb solar radiation and its residence time in the atmosphere. Accordingly, CO_2 has a GWP of 1 while methane has a GWP of 25, and nitrous oxide a GWP of 298.[9] To obtain the CO_2e quantity, the mass of the particular chemical is multiplied by the corresponding GWP, the product of which is the CO_2e for that chemical. The CO_2e value for each of the GHG chemicals is summed to obtain the total CO_2e GHG emissions. There are no federal regulations at this time limiting the emissions of CO_2. Also, CO_2 reporting requirements for stationary sources do not apply to construction emissions. However, in compliance with the EPA's definition of air pollution to include GHGs, we provide estimates of GHG emissions for construction activities below. The EPA did not establish NAAQS for any listed GHGs (EPA, 2018d), as their impact is on a global basis and not a local/regional basis.

8.2 Regulatory Requirements

The CAA, 42 U.S.C. 7401 et seq., as amended in 1977 and 1990, and 40 CFR 50 through 99 provide the federal statutes and regulations governing air pollution in the United States. The provisions of the CAA that are applicable to the Project are discussed below. See section B.8.5 for estimated potential operational emissions for the EPNG Compressor Station, and comparison with the major regulatory thresholds.

Air Permitting

New Source Review (NSR) is a pre-construction air permit program designed to protect air quality when air pollutant emissions are increased either through the construction of new stationary sources or modifications to existing stationary sources. In areas with good air quality, NSR ensures that the new emissions do not degrade the air quality, which is achieved through the implementation of the Prevention of Significant Deterioration (PSD) permitting program for major sources or state permit programs for minor sources. In areas with poor air quality, Nonattainment NSR ensures that the new emissions do not inhibit progress toward cleaner air. In addition, NSR ensures that any large, new, or modified industrial source employs appropriate air pollution control

[9] These GWPs are based on a 100-year time period. We have selected their use over other published GWPs for other timeframes because these are the GWPs the EPA has established for reporting of GHG emissions and air permitting requirements. This allows for a consistent comparison with these regulatory requirements.

technologies. The NMED, ADEQ, and TCEQ administer the minor source NSR program and the major Nonattainment NSR and PSD programs in their respective states.

EPNG proposes to construct and operate stationary sources (the Red Mountain and Dragoon Compressor Stations) in Luna County, New Mexico and Cochise County, Arizona, respectively. Based on the operating emissions discussed below, the stations would not require major source (e.g., Title V) permitting.

New Source Performance Standards

The EPA promulgates New Source Performance Standards (NSPS) to establish emission limits and fuel, monitoring, notification, reporting, and recordkeeping requirements for stationary source types or categories. These regulations apply to new, modified, or reconstructed sources.

NSPS Subpart JJJJ applies to the proposed emergency generators at the Dragoon and Red Mountain Compressor Stations. Each engine would be required to meet emission limits for nitrogen oxides (NO_x), CO, and volatile organic compounds (VOC).

NSPS Subpart KKKK applies to the proposed turbines at the Dragoon and Red Mountain Compressor Stations. EPNG would comply with Subpart KKKK for each turbine by maintaining transportation contracts to demonstrate the sulfur content of the fuel combusted in each turbine does not exceed the applicable limits, and through manufacturer guarantees for NO_x emission rates.

NSPS Subpart OOOOa standards for fugitive emission releases of VOCs and methane would apply to any of the Project's pneumatic controllers having a natural gas bleed rate of greater than 6 standard cubic feet per hour. The Project would also be subject to the fugitive leak monitoring requirements of Subpart OOOOa.[10]

National Emission Standards for Hazardous Air Pollutants

The 1990 CAA amendments established a list of 189 hazardous air pollutants (HAP), resulting in the promulgation of National Emission Standards for Hazardous Air Pollutants. These standards regulate HAP emissions from specific source types located at major or area sources of HAPs by setting emission limits, monitoring, testing, record keeping, and notification requirements. The proposed emergency generators at the Dragoon and Red Mountain Compressor Stations would be subject to National Emission Standards for Hazardous Air Pollutants Subpart ZZZZ; compliance with Subpart ZZZZ is met by complying with NSPS Subpart JJJJ.

[10] We note that on September 11, 2018, the EPA proposed amendments to Subpart OOOOa, which if implemented may affect the ways in which affected sources are subject to the rule.

Greenhouse Gas Mandatory Reporting Rule

The EPA's Mandatory Reporting of GHG Rule (40 CFR 98) requires reporting of GHG emissions from suppliers of fossil fuels and facilities that emit greater than or equal to 25,000 tons per year of GHG CO_2e. Subpart W of the Mandatory Reporting of GHG Rule establishes reporting requirements for natural gas supplier's transmission pipeline systems, and specifically natural gas transmission compression. As indicated in table 16 below, both the Dragoon and Red Mountain Compressor Stations would emit greater than 25,000 tons per year of CO_2e; therefore, EPNG would be required to comply with all applicable reporting requirements specified in 40 CFR 98.

Methane Challenge Program

Kinder Morgan Inc. (Kinder Morgan), the operating partner of EPNG, is a charter member of Our Nation's Energy Future (ONE Future). ONE Future's overall goal is to achieve a methane "leakage rate" (defined as methane emissions per natural gas volume produced or volume of natural gas throughput) of 1 percent or less along the natural gas value chain by 2025. In August 2016, the EPA officially approved and publicly announced the ONE Future Commitment Option under the Natural Gas STAR Methane Challenge Program. The EPA has accepted Kinder Morgan's commitment and implementation plan to meet a 0.31 percent methane emissions intensity target by 2025 under the ONE Future option in EPA's Methane Challenge Program. EPNG participates in EPA's Methane Challenge Program through Kinder Morgan's ONE Future Commitment Option.

EPNG would implement the following items for the Project as part of the Methane Challenge Program:

- comply with all applicable requirements of NSPS OOOOa (described above), including leak detection and repair standards, similar to the leak detection and maintenance provisions specified in Kinder Morgan's Methane Challenge implementation plan; and

- implement techniques and practices to reduce transmission pipeline blowdown methane emissions to the extent feasible as time and conditions permit while maintaining pipeline safety and integrity and minimizing adverse customer impacts, as specified in Kinder Morgan's Methane Challenge Implementation Plan.

Conformity of General Federal Actions

According to Section 176(c)(1) of the CAA (40 CFR 51.853), a federal agency cannot approve or support an activity that does not conform to an approved SIP. Therefore, a conformity analysis to determine whether a project would conform to an approved SIP is required when a federal action would generate emissions exceeding

conformity threshold levels of pollutants for which an air basin is designated as nonattainment or maintenance. A conformity applicability determination requires that direct and indirect emissions of nonattainment or maintenance pollutants (or precursors) resulting from the federal action be compared with general conformity applicability emissions thresholds. If the thresholds are exceeded, general conformity applies and a conformity determination is required. No portion of the proposed Project is within a nonattainment area; therefore, the General Conformity requirements do not apply.

8.3 State Air Quality Regulations

The proposed Dragoon Compressor Station will be subject to ADEQ's air quality permitting requirements within the Arizona Administrative Code Title 18, Chapter 2. The proposed Red Mountain Compressor Station will be subject to NMED's air quality permitting requirements within New Mexico Administrative Code Title 20, Chapter 2. The portion of the proposed pipeline within the El Paso city limits will be subject to City of El Paso Rule 9.36.060 related to ambient air and emission standards. The remainder of the Loop Line will be subject to TCEQ requirements within the Texas Administrative Code, Title 30, Part 1, Sections 101 (General Air Quality Rules), 106 (Permits by Rule), and 111 (Control of Air Pollution from Visible Emissions and Particulate Matter). EPNG filed its air permit applications for the Dragoon and Red Mountain Compressor Stations in April and March, 2018, respectively.

EPNG would not conduct any open burning as part of this Project and therefore the Project would not require any state or locally issued open burn permits or permissions.

8.4 Construction Emissions Impacts and Mitigation

Emissions associated with construction activities generally include: (a) exhaust emissions from construction equipment; (b) fugitive dust emissions associated with construction vehicle movement on unpaved surfaces; and (c) fugitive dust associated with grading, trenching, backfilling, and other earth-moving activities. The exhaust emissions would depend on the equipment used and the horsepower-hours of operation. The combustion of gasoline and diesel fuels during construction of the Project would release NO_2, CO, VOCs, $PM_{2.5}$, PM_{10}, SO_2, HAPs, and GHGs. Fugitive dust emission levels would vary in relation to moisture content, composition, and volume of soils disrupted during construction. Fugitive dust and other emissions from construction activities generally do not result in a significant increase in regional pollutant levels, although local pollutant levels could increase temporarily.

Table 16 provides the estimated total Project construction emissions, including exhaust emissions and fugitive dust from on-road and off-road construction equipment and vehicles, exhaust emissions from construction worker vehicles for commuting and vehicles used to deliver equipment/materials to the site.

Table 16.
Potential Construction Emissions for the Project

Emission Source [A]	Emissions in tons per year							
	NO_x	CO	VOCs	PM_{10}	$PM_{2.5}$	SO_2	Total HAP	CO_2e
Dragoon Compressor Station								
Construction equipment (off-road)	2.29	1.25	0.31	0.10	0.09	<0.01	0.03	320
Worker and on-road construction equipment commuting	0.22	2.31	0.26	7.09	0.79	<0.01	0.03	474
Equipment/material delivery	0.16	0.06	0.01	0.15	0.03	0.01	<0.01	41
Fugitive dust	--	--	--	10.44	0.31	--	--	--
Subtotal Dragoon Compressor Station	**2.67**	**3.61**	**0.58**	**10.44**	**1.23**	**0.02**	**0.06**	**835**
Red Mountain Compressor Station								
Construction equipment (off-road)	3.05	1.67	0.42	0.14	0.12	<0.01	0.04	427
Worker and on-road construction equipment commuting	0.23	2.38	0.27	3.81	0.47	<0.01	0.03	488
Equipment/material delivery	0.15	0.06	0.01	0.09	0.02	0.01	<0.01	39
Fugitive dust	--	--	--	4.29	0.43	--	--	--
Subtotal Red Mountain Compressor Station	**3.42**	**4.11**	**0.69**	**8.33**	**1.04**	**0.02**	**0.07**	**954**
Pipeline								
Construction equipment (off-road)	17.65	8.07	2.35	0.68	0.60	0.03	0.24	2,930
Worker and on-road construction equipment commuting	0.05	0.49	0.05	16.12	1.63	<0.01	0.01	101
Equipment/material delivery	0.12	0.05	<0.01	0.15	0.03	0.01	<0.01	30
Fugitive dust	--	--	--	2.16	0.22	--	--	--
Subtotal Pipeline	**17.82**	**8.61**	**2.41**	**19.11**	**2.48**	**0.04**	**0.24**	**3,061**
Project Total [B]	**23.9**	**16.3**	**3.7**	**37.9**	**4.8**	**0.08**	**0.37**	**4,850**

A Compressor station and pipeline construction emission estimates obtained using South Coast Air Quality Management District (SCAQMD) Off-Road Model Mobile Source Emission Factors – 2017 Fleet Average, SCAQMD EMFAC 2007 (v.2.3) On-Road and Heavy-Heavy-Duty emission factors, and the Western Regional Air Partnership Fugitive Dust Handbook.

B Figures are rounded; columns may not sum to total.

EPNG would take the following measures and other applicable measures further detailed in its Fugitive Dust Control Plan, as needed, to control fugitive dust from Project construction activities:

- use water or other dust suppressants to control dust from construction operations, grading of roads, or land clearing;
- apply water on dirt access roads, material stockpiles and other surfaces that may give rise to airborne dusts;
- cover stockpiles and open hauling trucks with tarps, as necessary within the City of El Paso limits;
- gravel parking surfaces with more than 5 parking spaces within the City of El Paso limits;
- maintain access roads;
- promptly remove earth or other material from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water or other means;
- use paved roads for construction vehicle traffic, wherever practical;
- limit vehicle speeds as required to reduce dust generation; and
- maintain vehicles and equipment per manufacturers' specifications and applicable vehicle emissions standards.

Emissions associated with the construction-related activities would be temporary, and cease following completion of Project construction. We conclude that Project construction emissions would not cause, or significantly contribute to, a violation of any applicable ambient air quality standard.

8.5 Operational Emissions Impacts and Mitigation

The Project would generate air emissions during operation of the Dragoon and Red Mountain Compressor Stations. Operation of both stations would also result in fugitive emissions from minor leaks associated with piping components and valves.

Table 17 provides estimates of the potential annual emissions at the Dragoon and Red Mountain Compressor Stations. These estimated emissions are based on manufacturers' data, AP-42 emission factor data (EPA, 2017c), NSPS Subpart JJJJ emission limits (emergency generator), EPNG procedures (startup/shutdown), GHG calculation methodologies specified in 40 CFR 98, and assumptions that each station operates at full capacity during an entire year (i.e., 8,760 hours). Neither station would

likely operate at full load every day; therefore, table 17 provides worst-case estimates of emissions.

Compressor unit blowdowns (gas venting) can occur during initial testing, operational startup and shutdown, maintenance activities, and during emergency purposes. Emission estimates of compressor unit blowdowns are included in table 17. During normal operations, blowdowns resulting from compressor startup/shutdown and during maintenance activities would be infrequent.

Fugitive emissions are minor leaks that would occur at valves, seals, other piping components, and from operation and maintenance activities at the Dragoon and Red Mountain Compressor Stations. Fugitive emission estimates are included in table 17. As discussed above, EPNG must comply with the standards in NSPS Subpart OOOOa, which specify leak detection and repair programs for various components within the compressor stations.

Downstream Emissions

EPNG states that most, if not all, of the 271,000 Dth per day of natural gas delivered by the Project to CFE would be used to fuel natural gas-fired power plants in Mexico. The approximately 50,000 Dth per day of natural gas delivered to SRP would be used in power plants in Arizona, including the Santan Generating Station. The remaining 16,949 Dth per day of natural gas that would be transported by the Project is currently unsubscribed.

We determined GHG emissions from the end-use combustion of the 50,000 Dth per day of natural gas delivered to Arizona for intended use at power plants, including the Santan Generating Station. Fully combusting 50,000 Dth per day of natural gas would produce approximately 1.0 million metric tons of CO_2 per year.[11] This GHG emission estimate represents an upper bound because it assumes the total maximum capacity is transported 365 days per year and that all downstream facilities operate at their respective maximum allowable levels. As such, it is unlikely that this total amount of GHG emissions would occur. Additionally, were the generation capacity to be fueled by coal or oil, the GHG emissions would be greater. These estimated GHG emissions would result in a 1.1 percent increase in GHG emissions from fossil fuel combustion in Arizona[12] and a 0.02 percent increase in national emissions.[13]

[11] CO_2, not CO_{2e}, as we do not account for downstream N_2O in combustion (very minor component) or methane leakage.

[12] Based upon Arizona's GHG emissions of 90.9 million metric tons for 2015, per year according to the U.S. Energy Information Administration (October, 2018). https://www.eia.gov/environment/emissions/state/

[13] Based on 5,411 million metric tons of CO_2 in 2015 as presented by the EPA at https://www.epa.gov/sites/production/files/2017-02/documents/2017_complete_report.pdf.

We do not attempt here to perform a downstream emissions calculation for the quantities of natural gas that would be transported by the Project either having an indeterminate end use or intended for end users in Mexico. The Commission's policy is that downstream GHG emissions, unless used for a known domestic end use, provides no additional information to inform the NEPA analysis or the determination of Public Convenience and Necessity.

Table 17.
Potential Operational Emissions for the Project

Emission Source (tons per year)	**NO_x**	**CO**	**VOCs**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**Total HAP[A]**	**CO_2e**
Dragoon Compressor Station								
Turbine (normal operations plus startup/shutdown)	25.34	31.86	0.91	2.84	2.84	1.46	0.91	49,355
Emergency engine	1.22	2.44	0.61	0.01	0.01	0.01	0.61	
Fugitive emissions	--	--	0.54	--	--	--	--	375.7[A]
Compressor unit blowdowns	--	--	7.69	--	--	--	--	5,320
Subtotal Dragoon Compressor Station	**26.56**	**34.30**	**9.75**	**2.85**	**2.85**	**1.47**	**1.52**	**55,062**
Red Mountain Compressor Station								
Turbine (normal operation plus startup/shutdown)	25.36[C]	31.95	24.76	4.19	4.19	6.53	24.76[C]	49,504
Emergency generator	1.2	2.5	0.61	0.01	0.01	0.03	0.61	230.8
Fugitive emissions	--	--	0.56	--	--	--	--	4.7
Subtotal Red Mountain Compressor Station	**26.56**	**33.45**	**25.93**	**4.20**	**4.20**	**6.56**	**25.37**	**49,740**
Loop line fugitive releases	--	--	0.27[D]	--	--	--	--	20.91
Project Total[E]	**53.1**	**67.8**	**36.0**	**7.05**	**7.05**	**8.03**	**26.9**	**104,823**

A All VOC emissions are assumed to consist mostly of formaldehyde, a HAP.
B Chiefly consisting of methane emissions.
C VOC emissions are based on the unburned hydrocarbon (UHC) emission factor from the manufacturer. Assumes 100 percent of (non-methane) UHC is VOC. This conservative assumption results in a higher potential emission estimate than those calculated for Dragoon Compressor Station, which were estimated utilizing the UHC emission factor multiplied by the VOC content of the fuel. Actual VOC emissions for the Red Mountain Compressor Station, based on the VOC content of the fuel, would be considerably lower.
D Non-methane organic compounds are assumed to be VOC; remainder of releases consist of methane and CO2, accounted for in the CO2e estimate.
E Numbers are rounded.

8.6 Air Quality Modeling

EPNG completed refined air quality dispersion modeling using EPA's AERMOD model version 16216R and NMED Air Dispersion Modeling Guidelines to determine the

impacts of emissions from the Red Mountain Compressor Station on regional air quality and compliance with NAAQS. In addition, EPNG employed EPA's air quality screening tool AERSCREEN to determine whether refined modeling (e.g., use of AERMOD) for the Dragoon Compressor Station would be required to determine compliance with the NAAQS. The AERSCREEN results found that no refined modeling for the Dragoon Compressor Station was required to determine NAAQS compliance. Both analyses assumed that the facilities would be running at full capacity (i.e., 8,760 hours per year at maximum emission rates). Both models estimate the maximum predicted concentrations of criteria pollutants emitted from the compressor station using conservative assumptions. Background concentrations from the nearest air monitors were then added to the maximum predicted concentrations from the model and the total was compared to the NAAQS. The model results are provided in tables 18 and 19 below.

EPNG also performed cumulative modeling for the Dragoon Compressor Station and existing Willcox Compressor Station, and found that modeled pollutants were insignificant (below the Significant Impact Levels for all averaging periods) except for the 1-hour NO_2 standard. An increment evaluation determined modeled 1-hour NO_2 emissions from both stations to be 184.5 micrograms per cubic meter ($\mu g/m^3$), which complies with the NAAQS standard of 188 $\mu g/m^3$ (EPA, 2011)[14].

Table 18.
Dragoon Compressor Station - Predicted Air Quality Impacts ($\mu g/m^3$)

Pollutant	Averaging Period	Existing Ambient Background Concentration[A]	Maximum Modeled Concentration (AERSCREEN)	Combined Background and Maximum Modeled Concentration	NAAQS
CO	1-hour	914.29	3,070.59	3,984.87	40,000
	8-hour	1,790.48	2,763.53	4,554.01	10,000
NO_2[B]	1-hour	16.53	57.08	73.61	188
	Annual	73.13	5.35	78.48	100
$PM_{2.5}$	24-Hour	11.83	1.38	13.21	35
	Annual	5.43	0.23	5.66	12
PM_{10}	24-Hour	38.67	1.38	40.05	150
SO_2	1-Hour	8.96	1.69	10.66	196
	3-hour	2.61	1.69	4.31	1,300

A Background concentrations obtained from Monitors ID 04-019-1011, 04-019-1028, 04-019-0008, and 04-003-1005 in Tucson and Douglas, Arizona (EPA, 2017d).
B NO_2 is converted from total NOx by multiplying the modeled 1-hour emission rate by 0.8 and the modeled annual emission rate by 0.8.

[14] The Tier 2 Ambient Ratio Method with minimum and maximum ambient ratio of 0.2 and 0.5, respectively, was used for the prediction of total NO_2 concentrations

Table 19.
Red Mountain Compressor Station - Predicted Air Quality Impacts (µg/m^3)

Pollutant	Averaging Period	Existing Ambient Background Concentration[A]	Maximum Modeled Concentration (AERMOD)	Combined Background and Maximum Modeled Concentration	NAAQS
CO	1-hour	914.29	2,226.18	3,140.47	40,000[B]
	8-hour	1,790.48	1,876.41	3,866.89	10,000[B]
NO_2[C]	1-hour	16.53	98.52	115.05	188
	Annual	73.13	0.79	73.92	100[D]
$PM_{2.5}$	24-Hour	11.83	3.38	15.21	35
	Annual	5.43	0.15	5.58	12
SO_2	1-Hour	8.96	17.39	26.35	196
	3-hour	2.61	10.00	12.61	1,300

A Background concentration for 1-hour PM2.5 obtained from "South Central" monitor ID 6Q in Las Cruces, NM (EPA, 2017d). For purposes of NEPA analysis, background concentrations of remaining pollutants are assumed to be equivalent to concentrations obtained from monitors in Tucson and Douglas, AZ (see table 18). Although the Red Mountain Compressor Station is sited near Deming, NM to the west, which has a population similar to Douglas, AZ, these concentrations may be conservative due to Tucson's urban setting, and Deming's prevailing westerly winds.

B The combined concentration would also be in compliance with the New Mexico AAQS 1-hour and 8-hour CO standards of 14,997.5 and 9,960.1 µg/m3, respectively.

C Equilibrium NO2/NOx ratios were obtained using default ARM2 parameters, based on an empirical polynomial equation for the calculation of the ambient ratio, and was derived by fitting all 2001-2010 monitoring data (RTP Environmental Associates 2013).

D The combined concentration would also be in compliance with the New Mexico AAQS standard of 94 µg/m3.

The results in tables 18 and 19 indicate that the combined total of existing background and maximum modeled concentrations are less than the applicable NAAQS for all modeled pollutants. Therefore, the Project would not cause or significantly contribute to a degradation of ambient air quality. The Project would result in continued compliance with the NAAQS, which are established to be protective of human health, including sensitive populations such as children, the elderly, and asthmatics.

Class I Areas

Under the PSD program, 156 mandatory federal Class I areas are currently designated by the EPA to protect certain areas (e.g., wilderness areas, national parks, national forests) to ensure that deterioration of existing air quality-related values, such as visibility, is minimized in these areas. Relative to Class II and III areas, Class I areas have the most restrictive allowable PSD air quality increments. For a new major source or major modification located within 62 miles (100 kilometers) of Class I area, the facility is required to notify the appropriate federal land manager and assess the impacts of that project on the nearby Class I area.

Federal land managers are required under the CAA Amendments of 1977 to "protect the natural and cultural resources of Class I areas from the adverse impacts of air pollution." In order to do so, federal land managers must identify or define the air quality related values (AQRV) within their jurisdiction. An AQRV is a resource that may be adversely affected by a change in air quality. The resource may include visibility or a specific scenic, cultural, physical, biological, ecological, or recreational resource identified by the federal land manager for a particular area. Federal agency actions must not adversely affect AQRVs at any nearby Class I area. Currently, all federal land managers use Interagency Monitoring of Protected Visual Environments monitoring data to determine conditions for visibility in federal land manager areas (IMPROVE, 2017).

In 2010, the U.S. Forest Service, National Park Service, and FWS collaborated on the publication of the Federal Land Managers' Air Quality Related Values Work Group Report, which offers guidance on the protection of AQRVs and addresses assessments for sources proposed near Class I airsheds (U.S. Forest Service, 2010). The Report provides guidelines for performing a "Q/D" screening analysis for sources approximately 50 kilometers or greater away from a Class I area, where Q is the sum total emission rate of criteria pollutants and sulfuric acid mist in tons per year, and D is the distance of each Class I area from the proposed emission source in kilometers.[15] A Q/D value of 10 or greater indicates that a more detailed AQRV analysis is required. Although designed for evaluation of PSD sources, this method is useful for determining relative impacts of sources on Class I areas for NEPA purposes.

The nearest Class I area to the proposed Red Mountain Compressor Station, the Gila Wilderness in northern Grant County, New Mexico, is approximately 48 miles (77.4 kilometers) away. As the Gila Wilderness is more than 50 kilometers away, we accept EPNG's use of the Q/D method for purposes of determining potential impact of the station on this Class I area. The Q/D value for the Red Mountain Compressor Station is 0.47; thus, based on this chosen methodology, the station would result in negligible impacts on this Class I area and no further analysis is required.

The Chiricahua National Monument Wilderness Area is the Class I area closest to the proposed Dragoon Compressor Station, approximately 16.7 miles away, therefore requiring a more refined AQRV analysis. According to EPNG, to comply with EPA and ADEQ guidance, EPNG performed refined modeling for annual NO_2 and 24-hour $PM_{2.5}$ for potential emission rates from the station and found the concentrations for these pollutants to fall under their respective PSD Class II significance levels, and concluded that a PSD increment evaluation was not necessary (ADEQ, 2015; RTP Environmental Associates, 2017). Further, EPNG performed a Class I impact analysis for the Dragoon Compressor Station and determined that the maximum impacts for all modeled pollutants (NO_2, CO, SO_2, and $PM_{2.5}$) are well below the PSD Class I increments for all applicable averaging periods; the greatest impact (for annual NO_2) was found to be 3.21 percent of

[15] The proposed compressor stations would emit negligible quantities of sulfuric acid mist.

the increment. Therefore, the Dragoon Compressor Station would have a negligible impact on the Chiricahua National Monument Wilderness Area.

9. Noise

Construction of the Project would temporarily affect noise levels in the immediate vicinity of each location during times that active construction is occurring. Operation of the Dragoon and Red Mountain Compressor Stations would project noise radially into their respective surroundings, and result in long-term noise impacts. The Loop Line would not produce noise during normal operation.

The ambient sound level of a region is defined by the total noise generated within the specific environment, over varying land use types, and is usually comprised of natural and artificial sounds. Noise is generally defined as sound with intensity greater than the ambient or background sound pressure level. The magnitude and frequency of environmental noise may vary considerably over the course of the day, throughout the week, and across seasons, in part due to changing weather conditions and the effects of seasonal vegetation cover.

Two measures that relate the time-varying quality of environmental noise to its known effect on people are the 24-hour equivalent sound level (L_{eq}) and day-night sound level (L_{dn}). The L_{eq} is an A-weighted sound level containing the same energy as the instantaneous sound levels measured over a specific time period. Noise levels are perceived differently, depending on length of exposure and time of day. The L_{dn} takes into account the duration and time the noise is encountered. Specifically, the L_{dn} is the L_{eq} plus a 10 decibel on the A-weighted scale (dBA) penalty added to account for people's greater sensitivity to sound levels during late evening and early morning hours (between the hours of 10:00 pm and 7:00 am). The A-weighted scale is used to assess noise impacts because human hearing is less sensitive to low and high frequencies than mid-range frequencies. The human ear's threshold of perception for noise change is considered to be 3 dBA; 6 dBA is clearly noticeable to the human ear, and 10 dBA is perceived as a doubling of noise (Bies and Hansen, 1988).

9.1 Federal Noise Regulations

In 1974, the EPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA 1974). This document provides information for state and local governments to use in developing their own ambient noise standards. The EPA has indicated that an L_{dn} of 55 dBA protects the public from indoor and outdoor activity interference. We have adopted this criterion and use it to evaluate the potential noise impacts from the proposed Project at noise sensitive areas (NSA). NSAs are defined as homes, schools, churches, or any location where people reside or gather. FERC requires that the noise attributable to any new or modified compressor station during full load operation not exceed an L_{dn} of 55

dBA at any NSAs. Due to the 10 dBA nighttime penalty added prior to the logarithmic calculation of the Ldn, for a facility to meet the 55 dBA L_{dn} limit, it must be designed such that actual constant noise levels on a 24-hour basis do not exceed 48.6 dBA L_{eq} at any NSA.

No state or local noise ordinances apply to the Dragoon or Red Mountain Compressor Stations.

9.2 Ambient Noise Conditions

The Dragoon Compressor Station site is in a predominantly rural area approximately 13 miles southeast of Willcox, amidst a mixture of sparsely populated agricultural and undeveloped lands, in Cochise County, Arizona. The Red Mountain Compressor Station would also be in a rural area approximately 10 miles west of Deming, within Luna County, New Mexico, surrounded by predominantly undeveloped land with no residences or NSAs within 1.0 mile. The Loop Line would be constructed within a generally rural area, but will pass through the Homestead Meadows South residential community between MPs 189.0 to 191.5, in close proximity to some residences, as described above in section B.5.1.

On November 15, 2017, and February 15, 2018, EPNG's noise consultant performed ambient sound surveys at NSAs in proximity to the proposed Red Mountain and Dragoon Compressor Station sites, respectively. Results of these measured ambient noise levels at each of the three nearest NSAs to the Dragoon Compressor Station and the ambient noise level at the nearest NSA to the Red Mountain Compressor Station are included in the tables and discussion of operational impacts, in section 9.4, below.

9.3 Construction Noise Impacts and Mitigation

Noise would be generated during construction of the Project at each of the compressor station sites, and along the pipeline. Construction activities in any one area could last from several weeks to several months on an intermittent basis. On-site construction noise would occur mainly from heavy-duty construction equipment (e.g., trucks, backhoes, excavators, loaders, and cranes). While individuals in the immediate vicinity of the construction activities would experience an increase in noise, this effect would be temporary and local. Noise mitigation measures that EPNG would employ during construction include:

- restricting construction activities to daylight hours for normal site conditions;
- equipping vehicles and equipment with mufflers; and
- maintaining vehicles and equipment in accordance with manufacturers' recommendations.

Although some residences within 50 feet of construction workspaces may experience marked increases in noise levels at certain locations along the pipeline construction ROW (see section 8.5.1), daytime construction noise generated at these locations would be intermittent and with the exception of HDD construction, discussed below, would not last for extended periods at any location; impacts on nearby NSAs from these activities would not be significant. Due to the distance between the nearest NSAs and construction at the Dragoon and Red Mountain Compressor Stations, we conclude that construction noise impacts on these NSAs would be minimal.

EPNG would conduct HDD activities at one location along the pipeline route at Montana Avenue (Highway 180/62). While EPNG states that HDD drilling operations would be restricted to daylight hours and that the only 24-hour activity would be a 48-hour period to accommodate pipeline pull back, EPNG has estimated the noise impacts that would result from 24-hour-per-day operation of drilling operation at the HDD entry and exit locations. This information is summarized in table 20.

Table 20.
Estimated Noise Impacts from Montana Avenue HDD Operation (dBA)

NSA	Type	Distance and Direction from HDD	Ambient L_{dn} Noise Level	Estimated L_{dn} Noise Contribution from HDD (unmitigated)	Estimated L_{dn} Noise Contribution from HDD (mitigated)	Total L_{dn} Noise Level at NSA	Increase above Ambient L_{dn} Noise Level
HDD Entry							
1	Residence	107 ft. N	52.4	77.0	68.4	68.5	+16.1
2	Residence	409 ft. NW	58.8	61.74	53.7	60.0	+1.2
3	Residence	344 ft. S	55.3	63.6	55.5	58.4	+3.1
4	Church	727 ft. N	63.7	55.0	47.4	63.8	+0.1
HDD Exit							
5	Day Care Center	1,050 ft. SE	67.3	49.7	No mitigation	67.4	+0.1
6	Church	890 ft. E	72.1	49.3	No mitigation	72.1	0.0
7	Residence	1,163 ft. W	58.1	46.0	No mitigation	58.4	+0.3

Source: EPNG

Noise impacts summarized in table 20 would likely not be noticeable for nearby NSAs in the vicinity of the HDD exit site and at NSAs 2 and 4 near the HDD entry site. However, average noise levels at the HDD entry site would be more than doubled at NSA 1 and the increase in noise attributable to the HDD would likely be noticeable at NSA 3. EPNG's Noise Assessment Report for the HDD, filed September 14, 2018, assumes noise mitigation to reduce noise emitted at the HDD entry site in the form of a barrier wall or "equivalent sound barrier system" having a minimum Sound Transmission Class 20-31 rating. The report, however, does not specify the height of the wall, which plays a role in how effective the barrier would be to reduce noise impacts at nearby NSAs, particularly NSA 1. Further, the report acknowledges that EPNG may decide to install an equivalent sound barrier system, but does not specify design requirements for any alternative

system. Therefore, to ensure that EPNG makes all reasonable efforts to restrict the noise attributable to the Montana Avenue HDD entry site to no more than an L_{dn} of 55 dBA at nearby NSAs, **we recommend that**:

- **Prior to construction of the HDD crossing along the Loop Line at Montana Avenue, EPNG should file with the Secretary, for review and written approval by the Director of OEP the specific design requirements for EPNG's chosen noise mitigation method for the HDD entry site. Such design requirements should be included in a noise mitigation plan, accompanied by a diagram illustrating the placement of the mitigation structure(s) in relation to the HDD entry site equipment and nearby NSAs (as identified in its acoustic assessment report filed September 14, 2018), dimensions of the structure(s), minimum Sound Transmission Class rating for the structure(s), and supporting calculations estimating the expected mitigated L_{dn} noise level in dBA at nearby NSAs. During drilling operations, EPNG should implement the approved plan, monitor noise levels, include the initial noise levels in its biweekly status reports, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than an L_{dn} of 55 dBA at the NSAs.**

9.4 Operation Noise Impacts and Mitigation

Both the new compressor stations would generate noise on a continuous basis (up to 24 hours per day) when operating. Such noise would attenuate with distance. Each station would be equipped with one turbine-driven compressor unit. Noise generated from operation of each compressor station would originate from the following sources:

- turbine exhaust silencer system and associated exhaust stack;
- turbine air intake filter system with an in-duct intake silencer;
- outdoor lube oil cooler that serves the compressor;
- gas aftercooler (multi-fan air-cooled heat exchanger); and
- aboveground gas piping and piping components (e.g., valves, inlet filter/scrubbers).

The results of each ambient sound survey were combined with the predicted noise impacts from each respective proposed compressor station equipment to determine the noise impacts from operation of each compressor station at the closest NSAs. The predicted full-load noise contributions for each station incorporate the noise control measures for operational noise specified in the Ambient/Pre-Construction Noise Survey and Analysis Reports within Resource Report 9 Appendix 9.D (Hoover and Keith Inc. Report No. 3670) and EPNG's June 28, 2018 response to FERC's environmental data request (Hoover and Keith Inc. Report No. 3671).

Noise control measures at the Dragoon and Red Mountain Compressor Stations would include acoustic specifications and other design requirements for the compressor station building walls and roof, wall air supply fans, turbine exhaust silencer, aboveground piping, lube oil cooler, turbine air intake silencer, gas aftercooler, and compressor blowdown silencer. EPNG commits to employing all of these recommended noise mitigation measures, specified in detail within the above-mentioned reports. The recommended noise control measures would also serve to minimize vibration. The results of the operational noise analysis are provided in tables 21 and 22.

Table 21.
Noise Analysis for the proposed Dragoon Compressor Station (dBA)

NSA (residences)	Distance and Direction from Station	Ambient Background L_{dn} Noise Levels (incorporates Full Load Operation of existing Willcox Compressor Station)	Predicted L_{dn} Noise Level Contribution from new Dragoon Compressor Station	Predicted Total L_{dn} Noise Level	Predicted Change in L_{dn} from Existing Ambient
NSA 1	3,220 feet WSW	44.0	48.7	50.9	+6.0
NSA 2	3,160 feet SW	44.2	44.0	47.1	+2.9
NSA 3	2,510 feet SSW	44.0	47.6	49.2	+5.2
NSA 4	2,150 feet S	42.3	49.8	50.5	+8.2
NSA 5	2,430 feet E	42.3	48.0	49.0	+6.7

Table 22.
Noise Analysis for the proposed Red Mountain Compressor Station (dBA)

NSA (residence)	Distance and Direction from Station	Ambient Background L_{dn} Noise Levels	Predicted L_{dn} Noise Level Contribution from Station	Predicted Total L_{dn} Noise Level	Predicted Change in L_{dn} from Existing Ambient
NSA 1	5,280 feet NW	39.3	36.1	40.9	+1.7

The operational noise analysis in table 21 indicates that the proposed Dragoon Compressor Station's noise contribution would be clearly noticeable at NSAs 1, 3, 4, and 5. The operational noise analysis in table 22 indicates that the proposed Red Mountain

Compressor Station's noise contribution at nearby NSAs would not be perceptible at the closest NSA.

In addition, a gas blowdown vent for a compressor unit would be within the fenced area of the station, and would vent gas between the suction/discharge valves and compressor to the atmosphere via a blowdown silencer (called a "unit blowdown"). Unit blowdowns would typically be conducted 2 to 3 times per month at each compressor station. Blowdowns may also be required in the event of emergency shutdown situations, or as mandated by USDOT for annual testing purposes. Blowdowns cause a temporary increase in sound levels that typically last for about 1 to 5 minutes. Noise from emergency blowdowns may persist for longer periods.

EPNG would install blowdown silencers at the Dragoon and Red Mountain Compressor Stations specified to meet an A-weighed sound level of 60 dBA at 300 feet, and 70 dBA at 300 feet, respectively. This mitigated blowdown sound level is predicted to result in a noise level of approximately 38 dBA at the nearest NSA to the Dragoon Compressor Station, and approximately 37 dBA at the NSA associated with the Red Mountain Compressor Station.

The analysis for each compressor station summarized in tables 21 and 22 above shows that noise impacts at the NSAs from the compressor station would be below our 55 dBA requirement at nearby NSAs; however, the predicted noise increase at NSAs 1, 3, 4, and 5 in the vicinity of the Dragoon Compressor Station would be clearly noticeable. To ensure that noise impacts from operation of the Dragoon and Red Mountain Compressor Stations at nearby NSAs would be minimized to the extent feasible in these rural settings, and to verify compliance with the FERC's noise standards, **we recommend that**:

- **EPNG should make all reasonable efforts to ensure its predicted noise levels from the Dragoon and Red Mountain Compressor Stations are not exceeded at nearby NSAs and file with the Secretary noise surveys for each station no later than 60 days after placing each station into service. If a full power load condition noise survey is not possible, EPNG should file an interim survey at the maximum possible power load within 60 days of placing the station into service and file the full power load survey within 6 months. If the noise attributable to operation of all equipment at the station under interim or full power load conditions exceeds an L_{dn} of 55 dBA at any nearby NSA, EPNG should:**

  a. **file a report with the Secretary, for review and written approval by the Director of OEP, on what changes are needed;**

  b. **install additional noise controls to meet that level within 1 year of the in-service date; and**

c. confirm compliance with this requirement by filing a second full power load noise survey with the Secretary for review and written approval by the Director of OEP no later than 60 days after it installs the additional noise controls.

While existing noise levels would be impacted by operation of the Dragoon and Red Mountain Compressor Stations, based on our analyses, EPNG's proposed noise mitigation measures for each station, and our recommendation above, we conclude that the Project would not result in significant noise impacts on any nearby NSAs.

10. Reliability and Safety

The transportation of natural gas by pipeline involves some incremental risk to the public due to the potential for accidental release of natural gas. The greatest hazard is a fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death.

Methane has an auto-ignition temperature of 1,000 °F and is flammable at concentrations between 5.0 percent and 15.0 percent in air. An unconfined mixture of methane and air is not explosive, however it may ignite and burn if there is an ignition source. A flammable concentration within an enclosed space in the presence of an ignition source can explode. Methane is buoyant at atmospheric temperatures and disperses rapidly in air.

10.1 Safety Standards

The USDOT is mandated to prescribe minimum safety standards to protect against risks posed by pipeline facilities under Title 49, U.S.C. Chapter 601. The USDOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards which set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. PHMSA's safety mission is to ensure that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local level.

Title 49, U.S.C. Chapter 601 provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the federal

standards. A state may also act as USDOT's agent to inspect interstate facilities within its boundaries; however, the USDOT is responsible for enforcement actions. Of the three states, Arizona has delegated authority to inspect interstate pipeline facilities.

The USDOT pipeline standards are published in 49 CFR Parts 190-199. Part 192 specifically addresses natural gas pipeline safety issues.

Under a Memorandum of Understanding on Natural Gas Transportation Facilities dated January 15, 1993, between the USDOT and the FERC, the USDOT has the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) of the FERC's regulations require that an applicant certify that it will design, install, inspect, test, construct, operate, replace, and maintain the facility for which a Certificate is requested in accordance with federal safety standards and plans for maintenance and inspection. Alternatively, an applicant must certify that it has been granted a waiver of the requirements of the safety standards by the USDOT in accordance with section 3(e) of the Natural Gas Pipeline Safety Act. The FERC accepts this certification and does not impose additional safety standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the Memorandum to promptly alert USDOT. The Memorandum also provides for referring complaints and inquiries made by state and local governments and the general public involving safety matters related to pipelines under the Commission's jurisdiction.

The FERC also participates as a member of the USDOT's Technical Pipeline Safety Standards Committee which determines if proposed safety regulations are reasonable, feasible, and practicable.

The pipeline and aboveground facilities associated with the Project must be designed, constructed, operated, and maintained in accordance with the USDOT Minimum Federal Safety Standards in 49 CFR 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. The USDOT specifies material selection and qualification; minimum design requirements; and protection from internal, external, and atmospheric corrosion.

The USDOT also defines area classifications, based on population density in the vicinity of the pipeline, and specifies more rigorous safety requirements for populated areas. The class location unit is an area that extends 220 yards on either side of the centerline of any continuous 1-mile length of pipeline. The four area classifications are defined below:

Class 1	Location with 10 or fewer buildings intended for human occupancy.
Class 2	Location with more than 10 but less than 46 buildings intended for human occupancy.

Class 3 Location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or small well-defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period.

Class 4 Location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. For instance, pipelines constructed on land in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil and 18 inches in consolidated rock. Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock.

Class locations also specify the maximum distance to a sectionalizing block valve (e.g., 10.0 miles in Class 1, 7.5 miles in Class 2, 4.0 miles in Class 3, and 2.5 miles in Class 4). Pipe wall thickness and pipeline design pressures; hydrostatic test pressures; maximum allowable operating pressure (MAOP); inspection and testing of welds; and frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas. Preliminary class locations for the Project have been developed based on the relationship of the pipeline centerline to other nearby structures and manmade features. The Loop Line portion of the Project would consist of 14.92 miles of Class 1 and 2.07 miles of Class 3 pipe.

If a subsequent increase in population density adjacent to the ROW results in a change in class location for the pipeline, EPNG would reduce the MAOP or replace the segment with pipe of sufficient grade and wall thickness, if required to comply with the USDOT requirements for the new class location.

The USDOT Pipeline Safety Regulations require operators to develop and follow a written integrity management program that contain all the elements described in 49 CFR 192.911 and address the risks on each transmission pipeline segment. The rule establishes an integrity management program which applies to all high consequence areas (HCA).

The USDOT has published rules that define HCAs where a gas pipeline accident could do considerable harm to people and their property and requires an integrity management program to minimize the potential for an accident. This definition satisfies, in part, the Congressional mandate for USDOT to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area.

The HCAs may be defined in one of two ways. In the first method an HCA includes:

- current class 3 and 4 locations,
- any area in Class 1 or 2 where the potential impact radius[16] is greater than 660 feet and there are 20 or more buildings intended for human occupancy within the potential impact circle[17], or
- any area in Class 1 or 2 where the potential impact circle includes an identified site.

An identified site is an outside area or open structure that is occupied by 20 or more persons on at least 50 days in any 12-month period; a building that is occupied by 20 or more persons on at least 5 days a week for any 10 weeks in any 12-month period; or a facility that is occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate.

In the second method, an HCA includes any area within a potential impact circle which contains:

- 20 or more buildings intended for human occupancy, or
- an identified site.

Once a pipeline operator has determined the HCAs along its pipeline, it must apply the elements of its integrity management program to those segments of the pipeline within HCAs. The USDOT regulations specify the requirements for the integrity management plan at section 192.911. The HCAs have been determined based on the relationship of the pipeline centerline to other nearby structures and identified sites. Of the 17.0 miles of proposed Loop Line, EPNG has identified approximately 2.07 miles that would be classified as an HCA. The pipeline integrity management rule for HCAs requires inspection of the pipeline HCAs every 7 years.

The USDOT prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Each pipeline operator is required to establish an emergency plan that includes procedures to minimize the hazards of a natural gas pipeline emergency. Key elements of the plan include procedures for:

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;

[16] The potential impact radius is calculated as the product of 0.69 and the square root of: the MAOP of the pipeline in pounds per square inch gauge multiplied by the square of the pipeline diameter in inches.
[17] The potential impact circle is a circle of radius equal to the potential impact radius.

- emergency system shutdown and safe restoration of service;
- making personnel, equipment, tools, and materials available at the scene of an emergency; and
- protecting people first and then property, and making them safe from actual or potential hazards.

The USDOT requires that each operator establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency, and to coordinate mutual assistance. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials. EPNG would provide the appropriate training to local emergency service personnel before the pipeline is placed in service.

10.2 Pipeline Accident Data

The USDOT requires all operators of natural gas transmission pipelines to notify the USDOT of any significant incident and to submit a report within 30 days. Significant incidents are defined as any leaks that:

- caused a death or personal injury requiring hospitalization; or
- involve property damage of more than $50,000 (1984 dollars).[18]

During the 20-year period from 1996 through 2015, a total of 1,310 significant incidents were reported on the more than 300,000 total miles of natural gas transmission pipelines nationwide.

Additional insight into the nature of service incidents may be found by examining the primary factors that caused the failures. Table 23 provides a distribution of the causal factors as well as the number of each incident by cause.

[18] $50,000 in 1984 dollars is approximately $112,955.73 as of May 2015 (CPI, Bureau of Labor Statistics, 2015).

Table 23.
Natural Gas Transmission Pipeline Significant Incidents by Cause (1996-2015)

Cause[A]	Number of Incidents	Percentage
Pipeline material, weld, or equipment failure	354	27.0
Corrosion	311	23.7
Excavation	210	16.0
All other causes[B]	165	12.6
Natural forces[C]	146	11.1
Outside force[D]	84	6.4
Incorrect operation	40	3.1
Total	**1,310**	**100**

A All data gathered from PHMSA's Oracle BI Interactive Dashboard website for Significant Transmission Pipeline Incidents, https://hip.phmsa.dot.gov/analyticsSOAP/saw.dll?Portalpages&NQUser=PDM_WEB_USER&NQPassword=Public_Web_User1&PortalPath=%2Fshared%2FPDM%20Public%20Website%2F_portal%2FSC%20Incident%20Trend&Page=Significant&Action=Navigate&col1=%22PHP%20-%20Geo%20Location%22.%22State%20Name%22&val1=%22%22

B All other causes include miscellaneous, unspecified, or unknown causes.

C Natural force damage includes earth movement, heavy rain, floods, landslides, mudslides, lightning, temperature, high winds, and other natural force damage.

D Outside force damage includes previous mechanical damage, electrical arcing, static electricity, fire, explosion, fishing/maritime activity, intentional damage, and vehicle damage (not associated with excavation).

The dominant causes of pipeline incidents are corrosion and pipeline material, weld or equipment failure constituting 50.7 percent of all significant incidents. The pipelines included in the data set in table 23 vary widely in terms of age, diameter, and level of corrosion control. Each variable influences the incident frequency that may be expected for a specific segment of pipeline.

The frequency of significant incidents is strongly dependent on pipeline age. Older pipelines have a higher frequency of corrosion incidents and material failure, because corrosion and pipeline stress/strain is a time-dependent process.

The use of both an external protective coating and a cathodic protection system[19], required on all pipelines installed after July 1971, significantly reduces the corrosion rate compared to unprotected or partially protected pipe.

Outside force, excavation, and natural forces are the cause in 33.5 percent of significant pipeline incidents. These result from the encroachment of mechanical equipment such as bulldozers and backhoes; earth movements due to soil settlement, washouts, or geologic hazards; weather effects such as winds, storms, and thermal

[19] Cathodic protection is a technique to reduce corrosion (rust) of the natural gas pipeline through the use of an induced current or a sacrificial anode (like zinc) that corrodes at faster rate to reduce corrosion.

strains; and willful damage. Table 24 provides a breakdown of external force incidents by cause.

Table 24.
Natural Gas Transmission Pipeline Significant Excavation, Natural Forces, and Outside Force Incidents by Cause (1996-2015)

Cause[A]	Number of Excavation, Natural Forces, and Outside Force Incidents	Percentage of All Incidents[B, C]
Third party excavation damage	172	13.1
Heavy rain, floods, mudslides, landslides	74	5.7
Vehicle (not engaged with excavation)	49	3.7
Earth movement, earthquakes, subsidence	32	2.4
Lightning, temperature, high winds	27	2.1
Operator/contractor excavation damage	25	1.9
Unspecified excavation damage/previous damage	13	1.0
Other or unspecified natural forces	13	1.0
Fire/explosion	9	0.7
Fishing or maritime activity	9	0.7
Other outside force	9	0.7
Previous mechanical damage	6	0.5
Electrical arcing from other equipment/facility	1	0.1
Intentional damage	1	0.1
Total	**440**	**33.5**

A All data gathered from PHMSA's Oracle BI Interactive Dashboard website for Significant Transmission Pipeline Incidents, https://hip.phmsa.dot.gov/analyticsSOAP/saw.dll?Portalpages&NQUser=PDM_WEB_USER&NQPassword=Public_Web_User1&PortalPath=%2Fshared%2FPDM%20Public%20Website%2F_portal%2FSC%20Incident%20Trend&Page=Significant&Action=Navigate&col1=%22PHP%20-%20Geo%20Location%22.%22State%20Name%22&val1=%22%22 (USDOT 2016a). Accessed on 2/17/2016.
B Percentage of all incidents was calculated as a percentage of the total number of incidents natural gas transmission pipeline significant incidents (i.e., all causes) presented in table 22
C Due to rounding, column does not equal 33.5 percent.

Older pipelines have a higher frequency of outside forces incidents partly because their location may be less well known and less well marked than newer lines. In addition, the older pipelines contain a disproportionate number of smaller-diameter pipelines; which have a greater rate of outside forces incidents. Small diameter pipelines are more easily crushed or broken by mechanical equipment or earth movement.

Since 1982, operators have been required to participate in "One Call" public utility programs in populated areas to minimize unauthorized excavation activities in the vicinity of pipelines. The "One Call" program is a service used by public utilities and some private sector companies (*e.g.*, oil pipelines and cable television) to provide

preconstruction information to contractors or other maintenance workers on the underground location of pipes, cables, and culverts.

10.3 Impact on Public Safety

The service incidents data summarized in table 24 include natural gas transmission system failures of all magnitudes with widely varying consequences.

Table 25 presents the annual injuries and fatalities that occurred on natural gas transmission lines from incidents for the 5-year period between 2011 and 2015. The majority of fatalities from pipelines are due to local distribution pipelines not regulated by FERC. These are natural gas pipelines that distribute natural gas to homes and businesses after transportation through interstate natural gas transmission pipelines. In general, these distribution lines are smaller diameter pipes and/or plastic pipes which are more susceptible to damage. Local distribution systems do not have large rights-of-way and pipeline markers common to the FERC regulated natural gas transmission pipelines. Therefore, incident statistics inclusive of distribution pipelines are inappropriate to use when considering natural gas transmission projects.

Table 25.
Injuries and Fatalities – Natural Gas Transmission Pipelines

	Injuries		Fatalities	
Year	Employees	Public	Employees	Public
2011	1	0	0	0
2012	3	4	0	0
2013	0	2	0	0
2014	1	0	1	0
2015	12	2	6	0

All data gathered from PHMSA Pipeline Incident Flagged Files website on March 6, 2015
http://phmsa.dot.gov/pipeline/library/data-stats/flagged-data-files (USDOT, 2015).

The nationwide totals of accidental fatalities from various anthropogenic and natural hazards are listed in table 26 in order to provide a relative measure of the industry-wide safety of natural gas transmission pipelines. Direct comparisons between accident categories should be made cautiously, however, because individual exposures to hazards are not uniform among all categories. The data nonetheless indicate a low risk of death due to incidents involving natural gas transmission pipelines compared to the other categories. Furthermore, the fatality rate is much lower than the fatalities from natural hazards such as lightning, tornados, or floods.

Table 26.
Nationwide Accidental Fatalities by Cause

Type of Accident	Annual Number of Deaths
All unintentional deaths	146,571
Motor vehicle[A]	35,369
Poisoning[A]	38,851
Falls[A]	30,208
Drowning[A]	3,391
Fire, smoke inhalation, burns[A]	2,760
Floods[B]	81
Tornado[B]	72
Lightning[B]	49
Hurricane[B]	47
Natural gas distribution lines[C]	13
Natural gas transmission pipelines[C]	2

A Accident data presented for motor vehicle, poisoning, falls, drowning, fire, smoke inhalation, and burns represent the annual accidental deaths recorded in 2013 (Centers for Disease Control and Prevention, 2013; Deaths: Final Data for 2013; http://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_02.pdf. Accessed 2/17/2016.)

B Accident data presented for floods, tornados, lightning, and hurricanes represent the 30 year average of accidental deaths between 1985 and 2014 (National Oceanic and Atmospheric Administration, 2016. National Weather Service, Office of Climate, Water and Weather Services, National Hazard Statistics, 30 year average (1985-2014); Available at: http://www.nws.noaa.gov/om/hazstats.shtml. Accessed 2/17/2016.)

C Accident data presented for natural gas distribution lines and transmission pipelines represent the 20-year average between 1996 and 2015 (USDOT, 2016. PHMSA, Pipeline Significant Incident 20 Year Trend: 20-Year Average (1996-2015); Available at: http://opsweb.phmsa.dot.gov/primis_pdm/significant_inc_trend.asp. Accessed 2/17/2016.

The available data show that natural gas transmission pipelines continue to be a safe, reliable means of energy transportation. From 1996 to 2015, there were an average of 66 significant incidents, 9 injuries and 2 fatalities per year. The number of significant incidents over the more than 303,000 miles of natural gas transmission lines indicates the risk is low for an incident at any given location. The operation of the Project would represent a slight increase in risk to the nearby public.

11. Cumulative Impacts

In accordance with NEPA and with FERC policy, we identified other actions in the vicinity of the Project facilities and evaluated the potential for a cumulative impact on the environment. As defined by the CEQ, a cumulative effect is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of the agency or party undertaking such other actions. Cumulative impacts can result from individually minor, but collectively significant actions, taking place over time. The CEQ guidance states that an adequate cumulative effects analysis may be conducted by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions (CEQ, 1997b). In this analysis, we consider the impacts of past projects

within defined geographic scopes as part of the affected environment (environmental baseline) which were described and evaluated in the preceding environmental analysis. However, present effects of past actions (e.g., the permanent ROW for the existing EPNG Line Nos. 1100 and 1103) that are relevant and useful are also considered. Table 26 summarizes the resource-specific geographic scopes that were considered in this analysis.

We have evaluated the cumulative impacts of the proposed Project consistent with other recent assessments issued by the Commission, and in accordance with recommended CEQ and EPA methodologies (CEQ, 1997b; EPA, 1999). The EPA also recommended that we follow the cumulative impacts analysis methodology *Guidance for Preparers of Cumulative Impact Analysis* developed jointly by the EPA, the Federal Highway Administration, and the California Department of Transportation[20] to assess cumulative impacts for the proposed Project.

Our cumulative effects analysis focuses on potential impacts from the proposed Project on resource areas or issues where the incremental contribution could result in cumulative impacts when added to the potential impacts of other actions. To avoid unnecessary discussions of insignificant impacts and projects and to adequately address and accomplish the purposes of this analysis, an action must first meet the following three criteria to be included in the cumulative analysis:

- affects a resource also potentially affected by the Project;
- causes this impact within all, or part of, the Project area defined by the resource-specific geographic scope; and
- causes this impact within all, or part of, the time span of the proposed Project's estimated impacts.

As described in our analysis above within section B of this EA, constructing and operating the Project would temporarily and permanently affect the environment. However, with the exception of air and noise impacts, we concluded that nearly all of the Project-related impacts would be contained within or adjacent to the temporary construction workspaces. For example, erosion control measures included in EPNG's ECMP and the FERC Plan would keep disturbed soils within the work areas and would therefore not contribute to cumulative impacts on soil resources. Resources that could be affected outside the immediate Project area and are subject to our cumulative impacts review include watershed-level impacts on vegetation and general wildlife; visual resources; socioeconomics; traffic; air quality and noise (both construction-related and operational); and climate change.

The following resources would not be affected by the Project, and therefore no cumulative impacts would occur on:

- geological resources due to the relatively shallow depth of excavation;

[20] See http://www.dot.ca.gov/ser/cumulative_guidance/approach.htm.

because construction would take place within areas previously disturbed by pipeline facility construction; karst terrain are not present; and blasting would not be required;

- 100-year floodplains, as we did not identify other currently proposed or reasonably foreseeable projects that would be constructed within the 100-year floodplain shared by the proposed EPNG Red Mountain Compressor Station;[21]

- active mineral resources or oil wells, as none are present in the Project area;

- groundwater resources due to the relatively shallow depth of excavation and the depth to groundwater, therefore, the Project would not contribute to cumulative impacts on groundwater resources;

- endangered or threatened species as the Project would have *no effect* on endangered or threatened species and therefore it would not contribute to cumulative impacts on listed species;

- NRHP-eligible cultural resources as none were identified in the areas affected by the Project; therefore, the Project would have no impact on cultural resources and would not result in cumulative impacts on these resources;

- land use, as the Loop Line and the two new compression facilities would be constructed adjacent to, or within existing EPNG easements or properties, and no change in land use would occur;

- natural or scenic areas and parks, registered natural landmarks, designated National or State Wilde and Scenic Rivers, special use areas, or visually sensitive areas, because none are within the Project area; or

- surface water or wetlands, as these resources are not present in the Project-affected area.

Table 27 below summarizes the resource-specific geographic boundaries considered in this analysis, and the justification for each. Actions outside of these boundaries were not evaluated because their potential to contribute to cumulative impacts diminishes with increasing distance from the Project.

[21] As further discussed in section C.3 below, the Project's potential to displace floodplain capacity is negligible compared to the total floodplain area. Therefore, the fencing and grading at the Red Mountain Compressor Station would result in negligible impacts on the 100-year floodplain within which it is proposed.

Table 27.
Resource-Specific Regions and Temporal Scope for Determining
Cumulative Impacts of the Project

Environmental Resource	Geographic Area	Time Frame
Vegetation and Wildlife	Vegetation clearing can temporarily reduce or permanently eliminate wildlife habitat; affecting both resident and transient species. The geographic scope we used to assess cumulative impacts on vegetation and wildlife are the HUC-12 subwatersheds the Project occupies. Watersheds can serve as a geographic proxy for impacts on vegetation and wildlife and provides a natural boundary, as recommended by CEQ.	Within 5 years of completion of restoration, except for vegetation clearing at aboveground facility sites which would be permanent.
Visual Resources	The geographic scope for assessing cumulative impacts on a viewshed includes the surrounding area from where a new facility would be visible. Therefore, the geographic scope would be limited to areas where clearing of mature trees or installation of new aboveground facilities would occur, or where a ROW "scar" would be visible from nearby receptors. We considered approximately 500 feet; however, that distance could be greater depending on surrounding topography.	For loop Line - following completion of construction and restoration. Operation – lifetime for compressor stations
Socioeconomics	Impacts on socioeconomic conditions typically include the affected county, as demographic statistics are generally assessed on a county basis. Therefore, socioeconomic impacts of the Project in combination with other projects are evaluated within the boundaries of Hudspeth, El Paso, Luna, and Cochise Counties. As the Project's operation would only require 1 additional staff person at each of the compressor stations which are located in different states, the temporal scope of the socioeconomic assessment is restricted to effects during Project construction activities over the 8-month construction period.	Within estimated construction period – fall 2019 – summer 2020
Traffic	Due to the Project's limited scope and the short construction duration, the geographic scope for assessing contributions to cumulative impacts on traffic were evaluated by considering traffic-generating projects in the respective counties that may be under construction concurrent with the proposed Project.	Within estimated construction period – fall 2019 – summer 2020
Air Quality	Construction impacts include other actions within 0.25 mile from Project workspaces. We based operational impacts on EPNG's Significant Impact Level impact analysis, which shows that impacts from each compressor station drops below the Class II Significant Impact Level at a distance of less than one kilometer; therefore, we accept EPNG's proposal to adopt an impact radius of 15 kilometers for purposes of evaluating the Project's cumulative air impacts with other actions.[A]	Construction impacts would be limited to the 8-month construction period, while operational emissions would occur over the life of the Project.

Environmental Resource	Geographic Area	Time Frame
Noise	Construction impacts include other actions within 0.25 mile from the proposed Project's earth-disturbing equipment work. Operation impacts include other actions that would contribute a noise impact on any NSA within a 1-mile radius of the proposed Red Mountain or Dragoon Compressor Stations.	Construction noise impacts would be limited to the 8-month construction period, while operational noise emissions would occur over the life of the Project.
A The Significant Impact Level for operational air quality impacts is used to determine if a source contributes significantly to air quality degradation and requires additional analysis using a refined air quality model.		

11.1 Other Actions identified within the Geographic Scope

Appendices E-1 to E-3 summarize recent past, current, and reasonably foreseeable actions and affected resources potentially falling within one or more geographic scopes identified in table 27. EPNG obtained the information about present and future planned actions summarized in appendix E by consulting federal, state, and local agency and municipality websites.

Based on the geographic scopes outlined in table 27, we identified actions in appendix D for consideration in our cumulative impact assessment. These include the following types of actions:

- transportation improvement projects;
- residential land development;
- electric transmission line projects;
- solid waste landfilling;
- grazing and ranching activities;
- recreational activities;
- various land management activities; and
- monitoring and operations activities associated with the existing EPNG and other company pipeline facilities.

11.2 Potential Cumulative Impacts of the Proposed Project

The actions considered in our cumulative impact analysis identified in section B.11.1 may vary from the proposed Project in nature, magnitude, and duration. These actions are included based on the likelihood of their impacts coinciding with the Project's impacts, which means that these other actions have current or ongoing impacts or are "reasonably foreseeable." The actions we considered are those that could affect a similar resource within the same geographic scope defined in table 27, and during the same timeframe as the Project. The anticipated cumulative impacts of the Project and these

other actions are discussed below, as well as mitigation actions that EPNG would follow to reduce those impacts related to the Project. As discussed above, the potential for the proposed Project to result in cumulative impacts is limited to the following resource areas: vegetation and wildlife, socioeconomics, traffic, visual resources, air quality and noise, and climate change, as discussed below.

Vegetation and Wildlife

Projects from appendix E-1 that are within the cumulative impacts area for vegetation and wildlife for the Loop Line include the following:

- Ongoing low and medium density residential development;
- Operational activities at EPNG's Hueco Compressor Station; pipelines Number 1110, 1103, 1100, and 1136; and MLV 22;
- KN Energy Company's parallel pipeline; and
- Existing, inactive uranium and sand and gravel mines.

The impacts on vegetation and habitat would be from land clearing associated with the development of new homes, vegetation management on existing natural gas facilities ROW and aboveground facility sites, and disturbed mine areas where vegetation has been removed as a result of mining activity. These impacts would be both incremental (in the case of residential development) and repeated as with ongoing ROW vegetation management. (Incremental because they would expand the impacts already experienced in the Loop Line area and repeated because they would continue to occur over the operational life of the Loop Line).

Construction of the Loop Line would impact mostly shrub-dominated Chihuahua Desert. Construction activities would involve clearing, grading, and removal of vegetated habitat previously affected by construction of EPNG's other pipeline facilities. Vegetation and associated wildlife habitat would be affected for 2 to 5 years until revegetation is complete. Ongoing residential construction activities in the vicinity of the Loop Line would result in permanent impacts on vegetation and wildlife, and therefore would also contribute to cumulative impacts on these resources.

Once constructed, operational vegetation management of the Loop Line and other EPNG pipeline easements would limit the growth of trees and deep-rooted shrubs on the ROW. Other operational activities, such as pipeline maintenance or repairs, would only take place on an occasional basis, meaning that the potential for concurring actions between Project work and maintenance of EPNG's existing ROWs resulting in cumulative impacts would be very low.

Construction of new compression facilities at the Red Mountain and Dragoon compression sites would impact previously disturbed, semidesert shrubland habitat.

Construction activities would involve clearing, grading, and removal of vegetation that provide for wildlife habitat. Adverse impacts on vegetation would be minor and both short- and long-term, as the sites have been previously disturbed by construction and operation of compressor facilities. Use of EPNG's ECMP and adherence to the FERC Plan would further ensure that adverse impacts on vegetation and wildlife habitat would not be significant.

Projects from appendix E-2 that are within the cumulative impacts area for vegetation and wildlife for the Red Mountain Compressor Station include the following:

- Ongoing operation of the Butterfield Trail Regional Landfill;
- Ongoing grazing and ranching;
- Operational activities at EPNG pipelines Number 1600, 1103, 1100, and 2000; and the former Deming Compressor Station;

The impacts at these areas would be from land clearing at the landfill site, vegetation management on existing natural gas facilities ROW and aboveground facility sites, and vegetation alteration as a result of grazing and ranching activity. These ongoing actions have eliminated habitat within the watershed (in the case of the landfill) or are diminishing the habitat value of the watershed areas being grazed or ranched.[22]

Projects from appendix E-3 that are within the cumulative impacts area for vegetation and wildlife for the Dragoon Compressor Station include the following:

- Proposed Southline Transmission Line construction and operation;
- Ongoing grazing and ranching;
- Ongoing residential and commercial development;
- Operational activities at EPNG pipelines Number 1103 and 1100; and the operational Willcox Compressor Station;

Permanent impacts on vegetation and wildlife within the defined watershed would result from vegetation management on existing natural gas facilities ROW and aboveground facility sites, land clearing from residential and commercial development, and vegetation alteration as a result of grazing and ranching activity. In addition, the Southline Transmission Line project would result in temporary and permanent impacts to vegetation and wildlife, primarily from the installation of transmission towers and access roads. We expect that the transmission line developers would be required to implement similar measures and restriction as the Project to minimize impacts on vegetation, wildlife, and wildlife habitat.

[22] We consider the ongoing (and historically long-standing) agricultural, grazing, and ROW management actions identified in appendices E-1, E-2, and E-3 to be part of the environmental baseline for purposes of evaluating vegetation and wildlife impacts.

The minor short- and long-term adverse impacts from the Project would not have a noticeable contribution to overall cumulative impacts on vegetation or wildlife.

Visual Resources

As concluded in section B.5.2, visual impacts from the Project's construction and operation are expected to be minimal because the Loop Line would be constructed adjacent to or within an existing EPNG pipeline corridor (thus creating only a minimally wider ROW in some areas rather than a newly visible "scar" in the landscape), and the compressor stations would be constructed on EPNG sites where operational or non-operational compressor facilities currently exist. In addition, the compressor station sites would be screened from nearby visual receptors by existing vegetation.

The only actions identified within appendix E that have the potential to cumulatively add to the Project's visual impacts within the geographic scope defined in table 27 are the Butterfield Trail Regional Landfill near the Red Mountain Compressor Station site and the Southline Transmission Line near the Dragoon Compressor Station site. The Butterfield Trail Regional Landfill and the former Deming Compressor Stations are existing elements of the visual landscape in Luna County, while the new Red Mountain Compressor Station would be a new addition. However, as the new Red Mountain Compressor Station would be within the existing Deming Compressor Station site, it would represent only a minor change in the visual character of the area.

The Southline Transmission Line would be sited approximately 4 miles from the Dragoon Compressor Station site. Although some of the transmission structures may be visible from sensitive viewing areas near the Dragoon Compressor Station site, the distance to the Southline Transmission Line along with intervening topography can be expected to minimize the visual impact of the Southline Transmission Line.

Therefore, we conclude that the Project would result in a minimal cumulative impact on visual resources within the geographic scope.

Socioeconomics

Table E-3 in appendix E identifies the Southline Transmission Line as a project that may have socioeconomic effects within the geographic and temporal scope of the Project. The Southline Transmission Project would be constructed by workers who either already reside in the Project area, and whose effect on socioeconomic conditions is already accounted for in the baseline housing, economic, public services, and infrastructure conditions; or by workers who would temporarily move to the area for the transmission line construction project. While the number of outside workers for the transmission line project is not available, it is expected that the workforce would be similar in scale to that constructing the Dragoon Compressor Station, and that available housing and other public services would be sufficient to accommodate this demand without significant impact to Cochise County. We conclude a similar rationale regarding

any new construction workers associated with the ongoing residential and commercial development referred to in table E-1 for the Loop Line.

As concluded in section B.6, socioeconomic impacts from Project construction and operation are expected to be minimal. No major impacts are expected from any other projects within the defined geographic scope for socioeconomic impacts. Therefore, we conclude that the Project would result in a minimal cumulative impact on socioeconomics within the geographic scope.

Traffic

As described in section B.6.4, traffic impacts from Project construction are expected to be minimal. Traffic levels and congestion in Project areas may be affected during the 8-month construction period due to personnel movement and materials and equipment deliveries. If this takes place during the same time period as other active projects listed in appendix E (such as the construction of the Southline Transmission Line), there could be a cumulative impact on local traffic. However, we would expect the transmission line project (or others that involve considerable use of local road systems) to have traffic management plans, and that related impacts would be short term and minor. Operation of the Project would result in one new staff person being hired at each of the compressor stations. Any increases in traffic on local roadways due to the increase in staff or material deliveries would be negligible. We conclude that the Project would result in a minimal cumulative impact on traffic within the geographic scope.

Air Quality and Noise

A proposed highway widening project for Montana Avenue (Highway 180/62) is planned to commence in year 2025. Montana Avenue would be crossed by the proposed Loop Line using HDD at MP 191. Since the road widening project is not anticipated to commence until 2025, we do not expect this project to result in construction-related cumulative air quality or noise impacts with Project construction. Loop Line construction would begin at approximate MP 174.5, adjacent to the Hueco Compressor Station. Noise from Loop Line construction equipment would combine with compressor station operational noise during the 5-month Project construction period. Combined impacts would be minimal, however, as there are no sensitive receptors within 0.5 mile of the construction workspaces adjacent to the Hueco Compressor Station.

The Southline Transmission Project is outside the area of geographic influence for construction noise and air quality, therefore the Project would not contribute to cumulative impacts on these resources.

As discussed in section B.8.5, EPNG performed cumulative refined air dispersion modeling for the proposed Dragoon and existing Willcox Compressor Stations and found that the cumulative potential air impacts from both stations combined with background concentrations would comply with NAAQS outside each respective facility's fenceline

boundary. Also, as discussed in section B.9.4, EPNG performed cumulative full-load noise modeling for the combined operation of the Dragoon and Willcox Compressor Stations and predicted that noise impacts from nearby NSAs fall under the FERC's L_{dn} noise criterion of an L_{dn} of 55 dBA, including the incorporation of noise control measures that EPNG has committed to employ. As we recommend in section B.9.4, EPNG would be required to conduct a post-construction noise survey within 60 days of placing the Dragoon Compressor Station into service, and if that testing finds noise attributable to the station to exceed an L_{dn} of 55 dBA at any nearby NSAs, EPNG would be required to install additional noise controls within one year of the in-service date and perform a second noise survey within 60 days that it installs the additional noise controls to verify compliance with the criterion.

The Deming Compressor Station, adjacent to the Red Mountain Compressor Station, was abandoned in 2011 and no longer operates; therefore, the Deming Compressor Station has no potential to contribute to cumulative air quality or noise impacts.

We did not identify any other projects having the potential to cumulatively add to air quality or noise impacts when added to Project construction or operation within the defined geographic scope. Based on the above, we conclude that cumulative air quality and noise impacts from Project construction and operation would not be significant.

Climate Change

Climate change is the change in climate over time, and cannot be represented by single annual events or individual weather anomalies. While a single large flood event; a particularly cold summer; or warm winter are not necessarily strong indications of climate change; a series of floods or warm years that statistically change the average precipitation or temperature over years or decades may indicate climate change. However, recent research has begun to attribute certain extreme weather events to climate change (U.S. Global Change Research Program, 2017).

Climate change has already resulted in a wide range of impacts across every region of the United States and those impacts extend beyond atmospheric climate change alone and include changes to water resources, agriculture, ecosystems, and human health. As climate change is currently happening, the United States and the world are warming; global sea level is rising and acidifying; and certain extreme weather events are becoming more frequent and more severe. These changes are driven by accumulation of GHG in the atmosphere primarily through combustion of fossil fuels (coal, petroleum, and natural gas), combined with agricultural emissions and clearing of forests. These impacts have accelerated throughout the end of the 20th, and into the 21st century. Climate change is a global concern; however, for this analysis, we will focus on the potential cumulative climate change impacts on the Project areas.

The following observations of environmental impacts with a high or very high level of confidence are attributed to climate change in the Southwest region (U.S. Global Change Research Program, 2017a and 2017b; Melillo, 2014; National Oceanic and Atmospheric Administration, 2017):

- snowpack and streamflow amounts are projected to decline in parts of the Southwest, decreasing surface water supply reliability for cities, agriculture, and ecosystems;
- the Southwest produces more than half of the nation's high-value specialty crops, which are irrigation-dependent and particularly vulnerable to extremes of moisture, cold, and heat. Reduced yields from increasing temperatures and increasing competition for scarce water supplies will displace jobs in some rural communities;
- increased warming, drought, and insect outbreaks, all caused by or linked to climate change, have increased wildfires and impacts to people and ecosystems in the Southwest. Fire models project more wildfire and increased risks to communities across extensive areas;
- flooding and erosion in coastal areas are already occurring even at existing sea levels and damaging some California coastal areas during storms and extreme high tides. Sea level rise is projected to increase as Earth continues to warm, resulting in major damage as wind-driven waves ride upon higher seas and reach farther inland; and
- projected regional temperature increases, combined with the way cities amplify heat, will pose increased threats and costs to public health in southwestern cities, which are home to more than 90 percent of the region's population. Disruptions to urban electricity and water supplies will exacerbate these health problems.

The FERC staff has presented GHG emissions associated with construction and operation of the Project in section B.8.5.

There is no generally accepted significance criteria for GHG emissions. In addition, we cannot determine the Project's incremental physical impacts on the environment caused by GHG emissions. Therefore, we cannot determine whether the Project's contribution to climate change would be significant.

The construction and operation would increase the atmospheric concentration of GHGs, in combination with past and future emissions from all other sources, and contribute incrementally to future climate change impacts. There is no standard methodology to estimate what extent, a project's incremental contribution to greenhouse gas emissions would result in physical effects on the environment for the purposes of evaluating the Project's impacts on climate change, either locally or nationally. Further, we cannot find a suitable method to attribute discrete environmental effects to greenhouse gas emissions. We have looked at atmospheric modeling used by the Intergovernmental

Panel on Climate Change, EPA, National Aeronautics and Space Administration, and others and we found that these models are not reasonable for project-level analysis for a number of reasons. For example, these global models are not suited to determine the incremental impact of individual projects, due to both scale and overwhelming complexity.

Additionally, burning natural gas emits less CO_2 per unit of energy produced compared to other fuel sources (e.g., fuel oil or coal). EPNG has identified the potential for the Project's volumes serving its customer Comisión Federal de Electricidad to replace older coal and oil-fired technologies with natural gas-fired sources within power generation facilities in Mexico; therefore, the additional natural gas supply to these end-use sources may offset some GHGs currently being emitted by these facilities.

C. ALTERNATIVES

In accordance with NEPA and Commission policy, we evaluated alternatives to the Project to determine whether they would be reasonable and environmentally preferable to the proposed action, while meeting the Project objective. These alternatives included the no-action alternative, system alternatives, and site alternatives. The evaluation criteria used for developing and reviewing alternatives were:

- ability to meet the Project's stated objective;
- technical and economic feasibility and practicality; and
- significant environmental advantage over the proposed action.

Through environmental comparison and application of our professional judgment, each alternative is considered to a point where it becomes clear if the alternative could or could not meet the three evaluation criteria. To ensure a consistent environmental comparison and to normalize the comparison factors, we generally use desktop sources of information (e.g., publicly available data, geographic information system data, aerial imagery) and assume the same general workspace requirements for the alternative and the proposed action.

We reviewed alternatives against the evaluation criteria in the sequence presented above. The first consideration for including an alternative in our analysis is whether or not it could satisfy the stated purpose of the Project. An alternative that cannot achieve the purpose for the Project cannot be considered as an acceptable replacement for the Project. The second evaluation criteria is feasibility and practicality. Many alternatives are technically and economically feasible. Technically practical alternatives, with exceptions, would generally require the use of common construction methods. An alternative that would require the use of a new, unique, or experimental construction method may not be technically practical because the required technology is not available or is unproven. Economically practical alternatives would result in an action that generally maintains the price competitive nature of the proposed action. Generally, we do not consider the cost of an alternative as a critical factor unless the added cost to design, permit, and construct the alternative would render the project economically impractical.

Alternatives that would not meet the Project's objective or were not feasible were not brought forward to the next level of review (i.e., the third evaluation criterion). Determining if an alternative provides a significant environmental advantage requires a comparison of the impacts on pertinent resources, including an analysis of impacts on resources that are not common to the alternatives being considered. The determination must then balance the overall impacts and all other relevant considerations. In comparing the impact between resources, we also considered the degree of impact anticipated on each resource. Ultimately, an alternative that results in equal or minor advantages in

terms of environmental impact would not compel us to shift the impacts to another location, potentially affecting a new set of landowners.

1. No-Action Alternative

Under the no-action alternative, EPNG would not construct or operate the South Mainline Expansion Project and none of the impacts associated with the Project would occur. However, the Project objectives would not be met. EPNG would not be able to meet the Project's stated need in section A.2, including providing an incremental increase of 271,000 Dth per day of natural gas capacity to CFE and 50,000 Dth per day of capacity to SRP.

Although a Commission decision to deny the proposed action would avoid the environmental impacts addressed in this EA, other natural gas projects could be constructed to supply the electric generation facilities that would be served by the Project (see section A.2), and provide a substitute for the natural gas supplies offered by EPNG. Such alternative projects would require the construction of additional and/or new facilities in the same or other locations to meet the Project objectives. These alternatives would result in their own set of specific environmental impacts that could be greater or equal to those associated with the current proposal. Therefore, we have dismissed this alternative as a reasonable alternative to meet the Project objectives.

2. System Alternatives

System alternatives are alternatives to the proposed action that would make use of EPNG's (or other companies') existing, modified, or proposed pipeline systems to meet the stated objective of the proposed Project. Other than EPNG's South Mainline System, there are no other natural gas pipeline systems in the vicinity of the proposed Project that can provide transport from the requested receipt points to the desired delivery points without major expansion. Therefore, we identified no system alternatives that are technically feasible and would meet the Project objectives.

3. Alternative Facilities

EPNG has proposed to construct the Red Mountain and Dragoon Compressor Stations on EPNG-owned properties where previously abandoned (Red Mountain) or active (Dragoon) compression facilities exist. Construction at these existing stations would take place within the existing disturbed, fenced properties and would not require any expansion of the station sites. Based on our analysis in this EA, we have determined that the proposed sites for the Red Mountain and Dragoon Compressor Stations are acceptable locations and that construction on these previously developed sites would not result in significant environmental impacts. We did not receive any comments on, or objections to the proposed sites, nor did we receive any suggested alternative locations. EPNG's preliminary site investigations determined that the proposed sites were well-suited with regards to engineering and hydraulic constraints, and posed minimal

environmental impact. We agree, and as such did not evaluate site alternatives for the compressor stations.

The Loop Line would be constructed within or adjacent to EPNG's existing easement in an area that has been disturbed by prior construction activities. Constructing a pipeline within an existing utility corridor is an accepted strategy for reducing environmental impacts compared to the development of new greenfield pipeline rights-of-way. We did not receive any comments on, or objections to the Loop Line during scoping. Therefore, we do not recommend consideration of an alternative that would create new or expanded ROW for the Loop Line portion of the Project.

We do note that additional compression could be developed to provide the same transportation capacity as the Loop Line. According to EPNG, using additional compression in lieu of pipeline loop would require construction and operation of a new compressor station at a greenfield site in the same general area as the proposed Loop Line. This new compressor facility would result in additional permanent impacts on vegetation, land use, visual resources, and air quality and noise compared to the mostly temporary impacts associated with the Loop Line. We did not receive any comments indicating a preference for a new compressor station in Hudspeth or El Paso counties. Therefore, we find no reason to conclude that constructing an additional EPNG Compressor Station would present a significant environmental advantage over construction of the Loop Line, and we do not recommend it.

Consistency with Executive Order 11988

The construction of the Red Mountain Compressor Station at EPNG's existing Deming site would result in the placement of approximately 507 linear feet of safety fencing and crushed stone surface on approximately 1 acre of land within the 100-year floodplain. This fence and crushed stone would be outside any ephemeral drainage channels associated with the floodplain and would not require a Clean Water Act Section 404 permit. The proposed Project's footprint would eliminate a minor amount of floodwater storage from this floodplain.

EO 11988 directs federal agencies to demonstrate a comprehensive approach to floodplain management, and requires agencies to:

- avoid, to the extent possible, the long and short term adverse impacts associated with the occupancy and modification of floodplains; and
- avoid the direct or indirect support of floodplain development whenever there is a practicable alternative.

EO 11988 establishes avoidance of actions on the 100-year floodplain, as one method for meeting these requirements.

Our review concludes that no facilities or structures would be placed within the floodplain, and the impacts of the Project's fencing and use of crushed stone would be minimal when compared to the overall volume of the floodplain. Based on these factors, we conclude that EPNG's use of the site for the proposed Red Mountain Compressor Station does not conflict with the intent of EO 11988.

4. Conclusion

We did not identify any system, pipeline, or aboveground facility alternatives that would provide a significant environmental advantage over the proposed Project design. Therefore, we conclude that the proposed Project is the preferred alternative to meet the Project objectives.

D. CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis in this EA, we have determined that if EPNG constructs and operates the proposed facilities in accordance with its application and supplements, and the staff's recommended mitigation measures below, approval of the Project would not constitute a major action significantly affecting the quality of the human environment. We recommend that the Commission Order contain a finding of no significant impact and include the measures listed below as conditions in any authorization the Commission may issue to EPNG.

1. EPNG shall follow the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the EA, unless modified by the Order. EPNG must:

    a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;
    b. justify each modification relative to site-specific conditions;
    c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
    d. receive approval in writing from the Director of OEP **before using that modification**.

2. The Director of OEP, or the Director's designee, has delegated authority to address any requests for approvals or authorizations necessary to carry out the conditions of the Order, and take whatever steps are necessary to ensure the protection of environmental resources during construction and operation of the Project. This authority shall allow:

    a. the modification of conditions of the Order;
    b. stop-work authority; and
    c. the imposition of any additional measures deemed necessary to ensure continued compliance with the intent of the conditions of the Order as well as the avoidance or mitigation of unforeseen adverse environmental impact resulting from Project construction and operation.

3. **Prior to any construction**, EPNG shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, EIs, and contractor personnel will be informed of the EI's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.

4. The authorized facility locations shall be as shown in the EA, supplemented by filed alignment sheets, and shall include the ROW modification identified in

condition number 12. **As soon as they are available, and before the start of construction**, EPNG shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

EPNG's exercise of eminent domain authority granted under NGA Section 7(h) in any condemnation proceedings related to the Order must be consistent with these authorized facilities and locations. EPNG's right of eminent domain granted under NGA Section 7(h) does not authorize it to increase the size of its natural gas facilities to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. EPNG shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area**.

   This requirement does not apply to extra workspace allowed by the Commission's *Upland Erosion Control, Revegetation, and Maintenance Plan* and/or minor field realignments per landowner needs and requirements which do not affect other landowners or sensitive environmental areas such as wetlands.

   Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

   a. implementation of cultural resources mitigation measures;
   b. implementation of endangered, threatened, or special concern species mitigation measures;
   c. recommendations by state regulatory authorities; and
   d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.

6. **At least 60 days before construction begins**, EPNG shall file an Implementation Plan with the Secretary for review and written approval by the Director of OEP. EPNG must file revisions to the plan as schedules change. The plan shall identify:

    a. how EPNG will implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EA, and required by the Order;
    b. how EPNG will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
    c. the number of EIs assigned, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;
    d. company personnel, including EIs and contractors, who will receive copies of the appropriate material;
    e. the location and dates of the environmental compliance training and instructions EPNG will give to all personnel involved with construction and restoration (initial and refresher training as the Project progresses and personnel change);
    f. the company personnel (if known) and specific portion of EPNG's organization having responsibility for compliance;
    g. the procedures (including use of contract penalties) EPNG will follow if noncompliance occurs; and
    h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:

        (1) the completion of all required surveys and reports;
        (2) the environmental compliance training of onsite personnel;
        (3) the start of construction; and
        (4) the start and completion of restoration.

7. EPNG shall employ at least one EI for the Project. The EI(s) shall be:

    a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;
    b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;
    c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;
    d. a full-time position, separate from all other activity inspectors;

e. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
f. responsible for maintaining status reports.

8. Beginning with the filing of its Implementation Plan, EPNG shall file updated status reports with the Secretary on a **biweekly** basis until all construction and restoration activities are complete. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:

a. an update on EPNG's efforts to obtain the necessary federal authorizations;
b. the construction status of the Project, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally-sensitive areas;
c. a listing of all problems encountered and each instance of noncompliance observed by the EI during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);
d. a description of the corrective actions implemented in response to all instances of noncompliance;
e. the effectiveness of all corrective actions implemented;
f. a description of any landowner/resident complaints which may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and
g. copies of any correspondence received by EPNG from other federal, state, or local permitting agencies concerning instances of noncompliance, and EPNG's response.

9. EPNG must receive written authorization from the Director of OEP **before commencing construction of any Project facilities.** To obtain such authorization, EPNG must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).

10. EPNG must receive written authorization from the Director of OEP **before placing the Project into service**. Such authorization will only be granted following a determination that rehabilitation and restoration of the ROW and other areas affected by the Project are proceeding satisfactorily.

11. **Within 30 days of placing the authorized facilities in service**, EPNG shall file an affirmative statement with the Secretary, certified by a senior company official:

a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
b. identifying which of the conditions in the Order EPNG has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

12. EPNG shall restrict the new permanent pipeline ROW width for the Loop Line to 25 feet immediately adjacent to its existing operational ROW and restrict the new permanent pipeline ROW width to 50 feet where the proposed loop deviates from its existing operational ROW. This permanent pipeline ROW restriction applies between approximate MPs 174.5 and 191.5, with the exception of the sand dune area between MPs 188.25 and 189.00, where a 100-foot-wide ROW is required, and the residential area between approximate MPs 189.3 and 190.7, where no additional permanent ROW is proposed.

13. **Prior to construction of the Loop Line,** EPNG shall file with the Secretary, for review and written approval by the Director of OEP, evidence of landowner concurrence with the site-specific construction plan near MP 190.83 or file a revised site-specific construction plan near MP 190.83 that maintains a 10 foot buffer between the aboveground structures and the additional temporary workspace.

14. **Prior to construction of the HDD crossing along the Loop Line at Montana Avenue**, EPNG shall file with the Secretary, for review and written approval by the Director of OEP, the specific design requirements for EPNG's chosen noise mitigation method for the HDD entry site. Such design requirements shall be included in a noise mitigation plan, accompanied by a diagram illustrating the placement of the mitigation structure(s) in relation to the HDD entry site equipment and nearby NSAs (as identified in its acoustic assessment report filed September 14, 2018), dimensions of the structure(s), minimum Sound Transmission Class rating for the structure(s), and supporting calculations estimating the expected mitigated Ldn noise level in dBA at nearby NSAs. During drilling operations, EPNG shall implement the approved plan, monitor noise levels, include the initial noise levels in its biweekly status reports, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than an Ldn of 55 dBA at the NSAs.

15. EPNG shall make all reasonable efforts to ensure its predicted noise levels from the Dragoon and Red Mountain Compressor Stations are not exceeded at nearby NSAs and file with the Secretary noise surveys for the stations **no later than 60**

days after placing each station into service. If a full power load condition noise survey is not possible, EPNG should file an interim survey at the maximum possible power load **within 60 days** of placing the station into service and file the full power load survey **within 6 months.** If the noise attributable to operation of all equipment at the station under interim or full power load conditions exceeds an L_{dn} of 55 dBA at any nearby NSA**,** EPNG shall:

a. file a report with the Secretary, for review and written approval by the Director of OEP, on what changes are needed;

b. install additional noise controls to meet that level **within 1 year** of the in-service date; and

c. confirm compliance with this requirement by filing a second full power load noise survey with the Secretary for review and written approval by the Director of OEP no later than **60 days** after it installs the additional noise controls.

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F. LIST OF PREPARERS

Cotton, Douglas – Environmental Project Manager, Surface Water, Vegetation, and Wildlife, **Land Use, Socioeconomics, and Environmental Justice**
M.S., University of Wisconsin-Madison, 1980, Urban & Regional Planning
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Professional Geologist, 2008, North Carolina Board for the Licensing of Geologists
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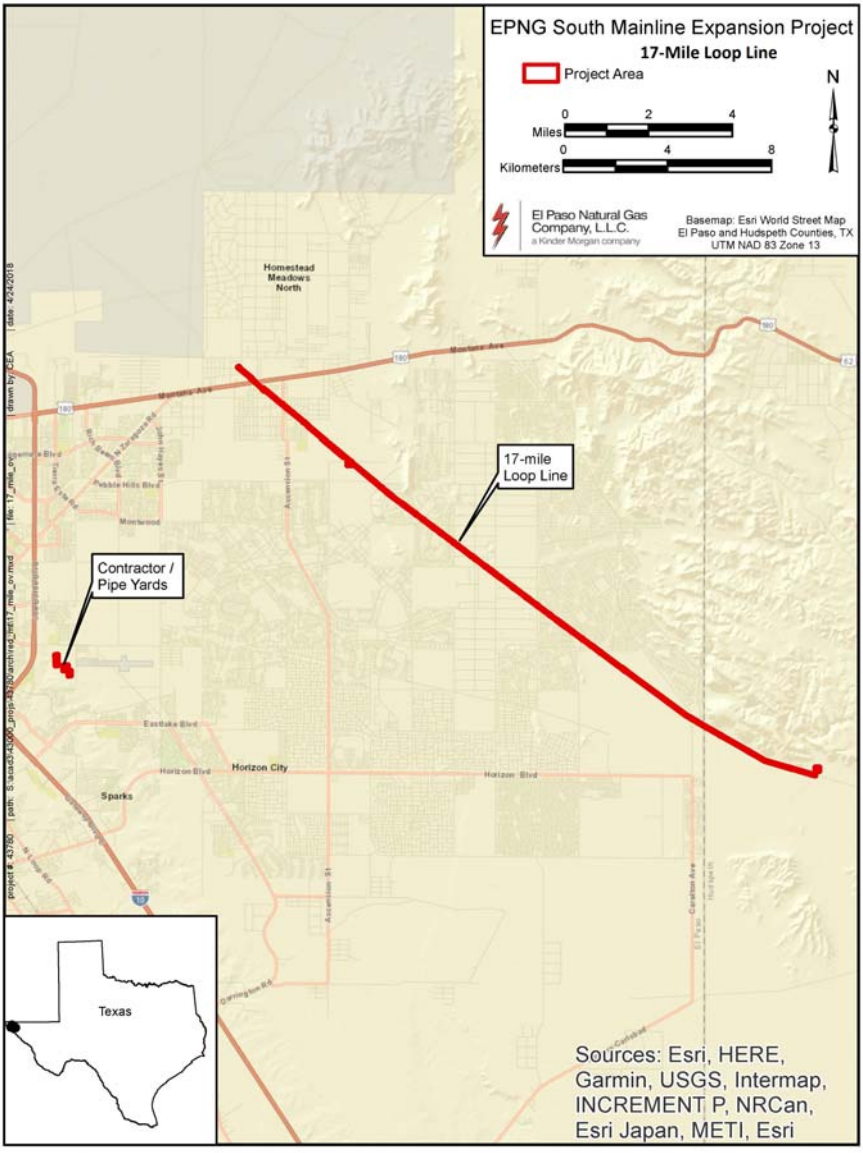
B.S., Geological Sciences (Geochemistry option), 2004, Virginia Tech

Appendix A

Detailed Maps and Drawings


EPNG South Mainline Expansion Project
17-Mile Loop Line
Project Area
N
0 2 4
Miles
0 4 8
Kilometers
El Paso Natural Gas Company, L.L.C.
a Kinder Morgan company
Basemap: Esri World Street Map
El Paso and Hudspeth Counties, TX
UTM NAD 83 Zone 13
Homestead Meadows North
Montwood
Horizon City
Sparks
17-mile Loop Line
Contractor / Pipe Yards
Texas
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri

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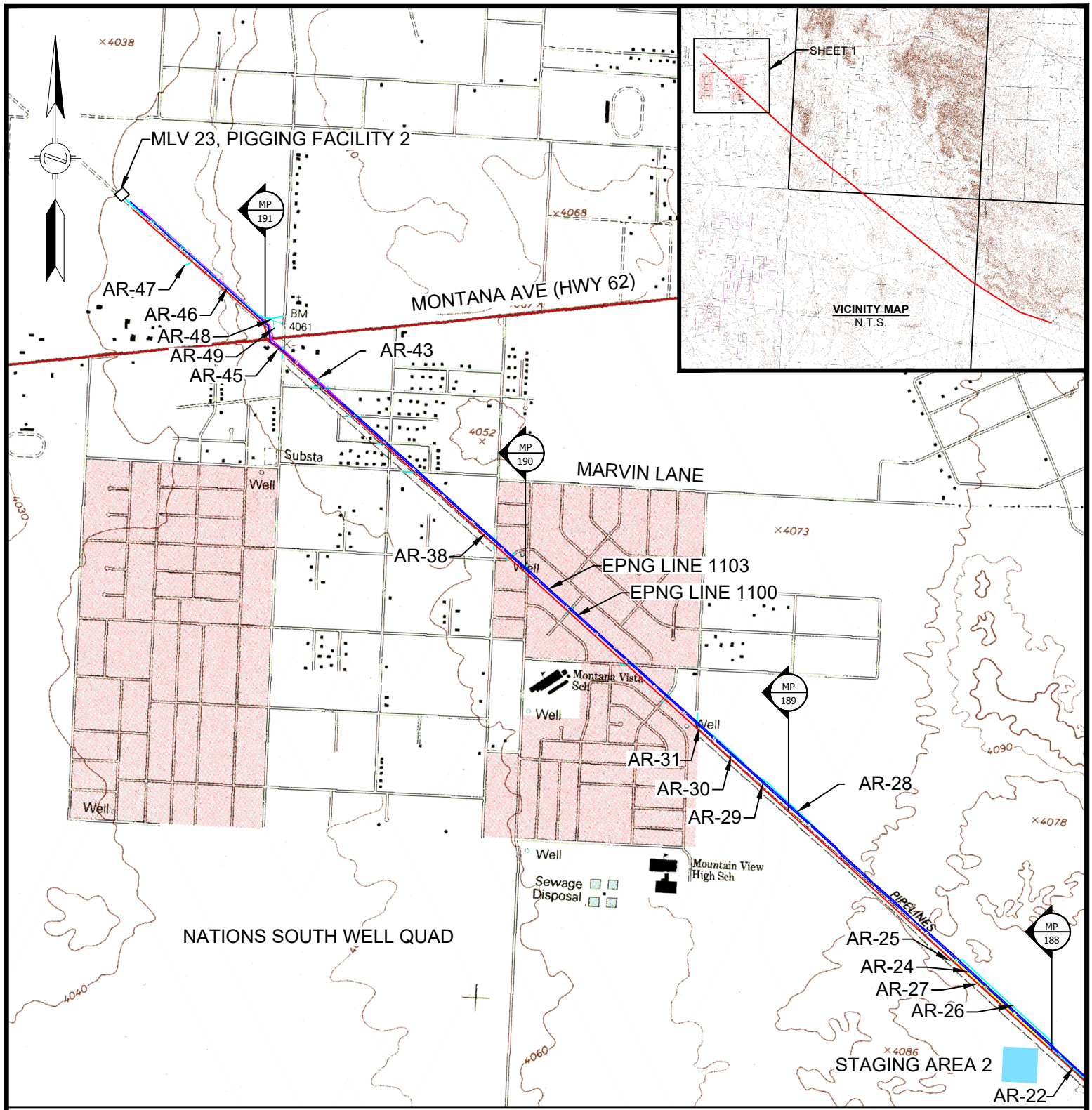

LEGEND

- PROPOSED PIPELINE
- EXISTING EPNG LINESS
- APPROXIMATE PROPERTY/SITE BOUNDARY
- UNIMPROVED ROAD
- LIGHT DUTY ROAD
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- ACCESS ROAD (AR)
- CONTRACTOR/PIPE YARD
- STAGING AREA
- COMPRESSOR STATION

0 2000' 4000'

No	Revision Description	Project ID	Date
E	UPDATED PER CLIENT COMMENTS	61311	02/15/18

:Reference Drawings

:Facility Name

KINDER MORGAN

encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED LOOP LINE 1110

EL PASO COUNTY, TEXAS

Status:

State:	TX	PIN No:	
County:	EL PASO AND HUDSPETH COUNTIES	Scale:	1"=2,000'
Category:	QUAD MAP		
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Drawing No:	1 OF 5	Rev	E

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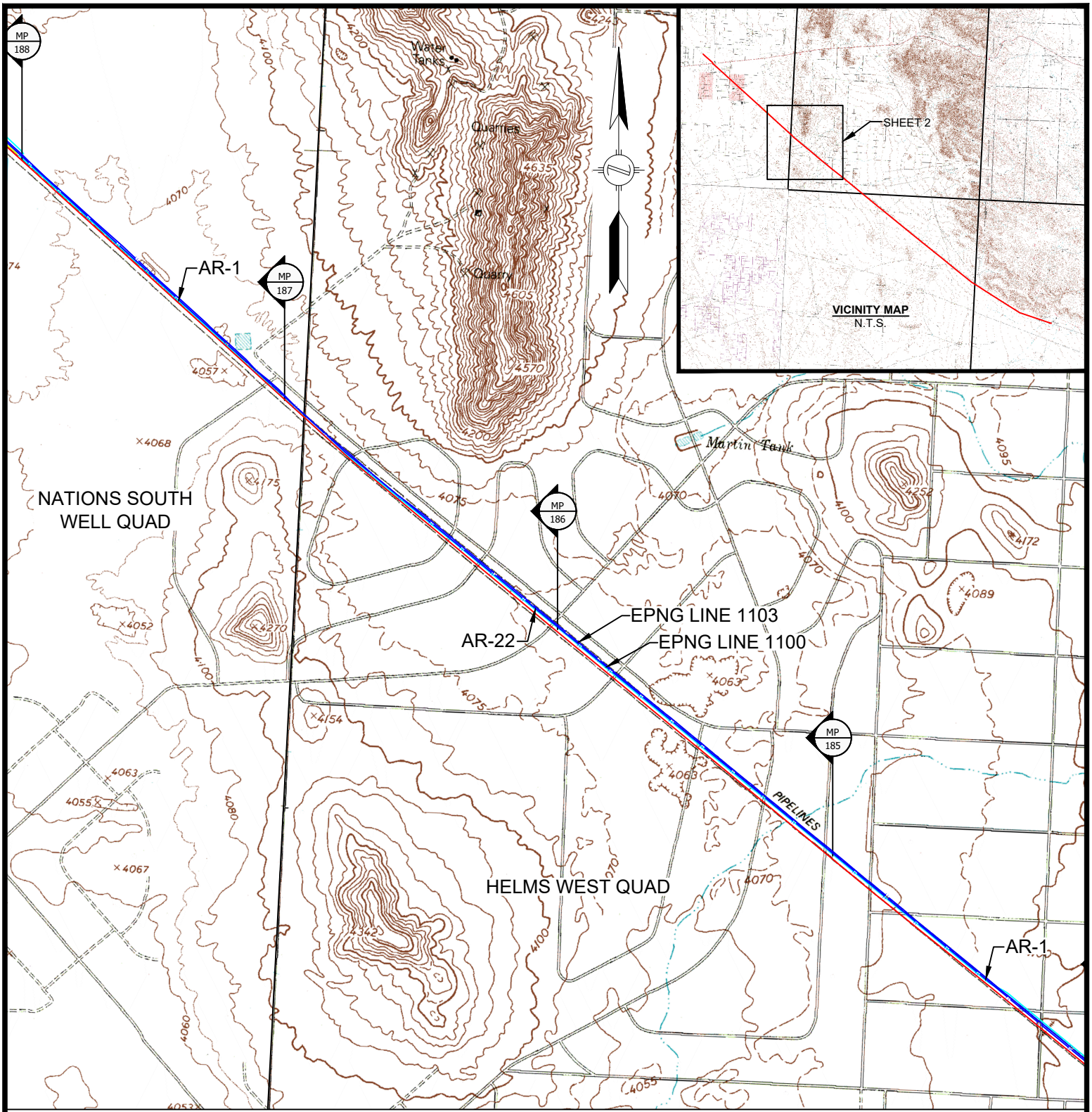

LEGEND

- PROPOSED PIPELINE
- EXISTING EPNG LINES
- APPROXIMATE PROPERTY/SITE BOUNDARY
- UNIMPROVED ROAD
- LIGHT DUTY ROAD
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- ACCESS ROAD (AR)
- CONTRACTOR/PIPE YARD
- STAGING AREA
- COMPRESSOR STATION

0 2000' 4000'

E	UPDATED PER CLIENT COMMENTS	61311	02/15/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

KINDER MORGAN

encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED LOOP LINE 1110

EL PASO COUNTY, TEXAS

Status:

State: TX	PIN No:
County: EL PASO AND HUDSPETH COUNTIES	Scale: 1"=2,000'
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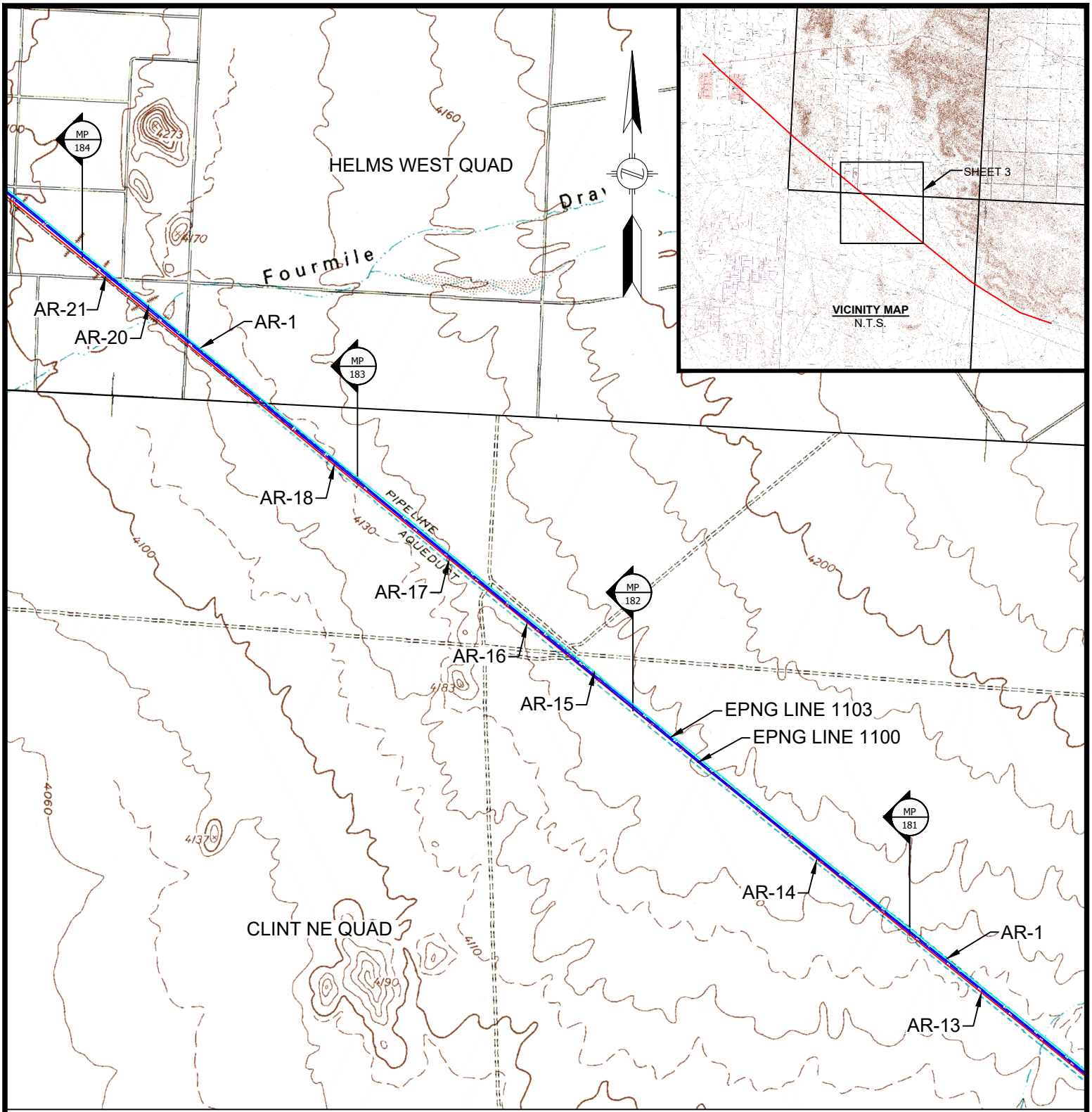

LEGEND

- PROPOSED PIPELINE
- EXISTING EPNG LINES
- APPROXIMATE PROPERTY/SITE BOUNDARY
- UNIMPROVED ROAD
- LIGHT DUTY ROAD
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- ACCESS ROAD (AR)
- CONTRACTOR/PIPE YARD
- STAGING AREA
- COMPRESSOR STATION

0 2000' 4000'

E	UPDATED PER CLIENT COMMENTS	61311	02/15/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

KINDER MORGAN

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ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED LOOP LINE 1110

EL PASO COUNTY, TEXAS

Status:

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County: EL PASO AND HUDSPETH COUNTIES	Scale: 1"=2,000'
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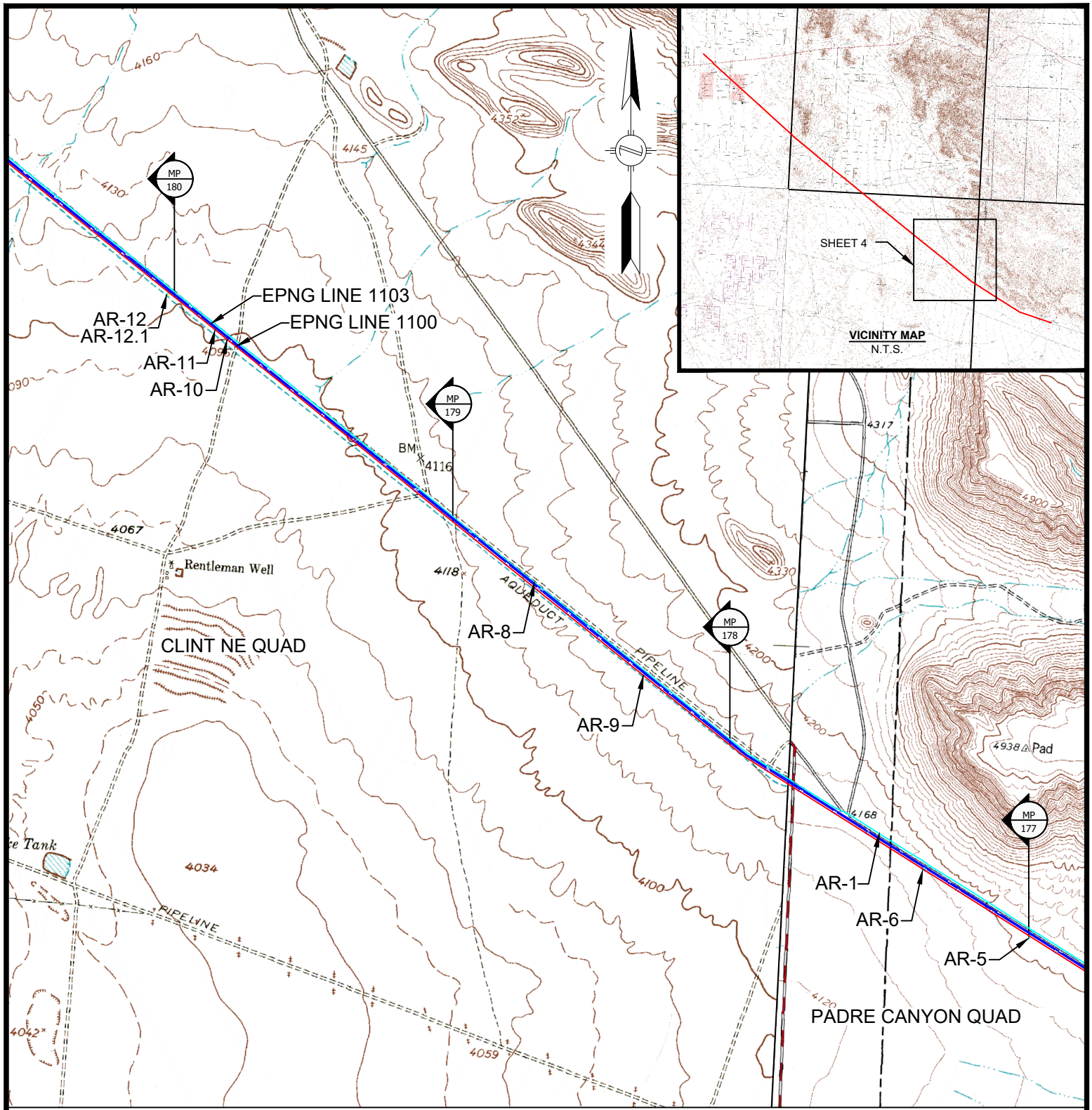

LEGEND

- PROPOSED PIPELINE
- EXISTING EPNG LINES
- APPROXIMATE PROPERTY/SITE BOUNDARY
- UNIMPROVED ROAD
- LIGHT DUTY ROAD
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- ACCESS ROAD (AR)
- CONTRACTOR/PIPE YARD
- STAGING AREA
- COMPRESSOR STATION

0 2000' 4000'

E	UPDATED PER CLIENT COMMENTS	61311	02/15/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

KINDER MORGAN

encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED LOOP LINE 1110

EL PASO AND HUDSPETH COUNTIES, TEXAS

Status:

State:	TX	PIN No:	
County:	EL PASO AND HUDSPETH COUNTIES	Scale:	1"=2,000'
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Drawing No:	4 OF 5	Rev	E

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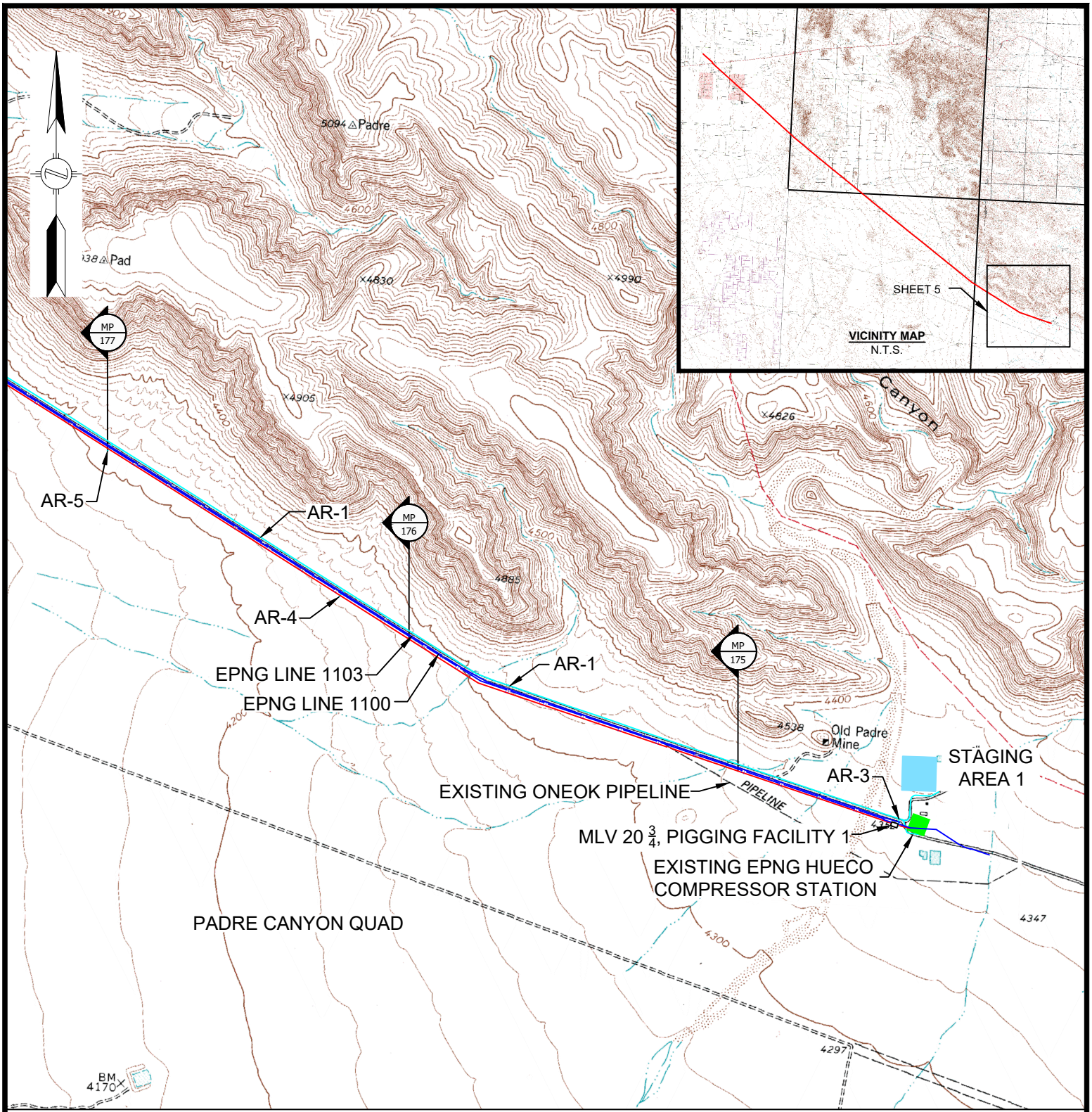


LEGEND

- PROPOSED PIPELINE
- EXISTING EPNG LINES
- APPROXIMATE PROPERTY/SITE BOUNDARY
- UNIMPROVED ROAD
- LIGHT DUTY ROAD
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- ACCESS ROAD (AR)
- CONTRACTOR/PIPE YARD
- STAGING AREA
- COMPRESSOR STATION

0 2000' 4000'

E	UPDATED PER CLIENT COMMENTS	61311	02/15/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

KINDER MORGAN

encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

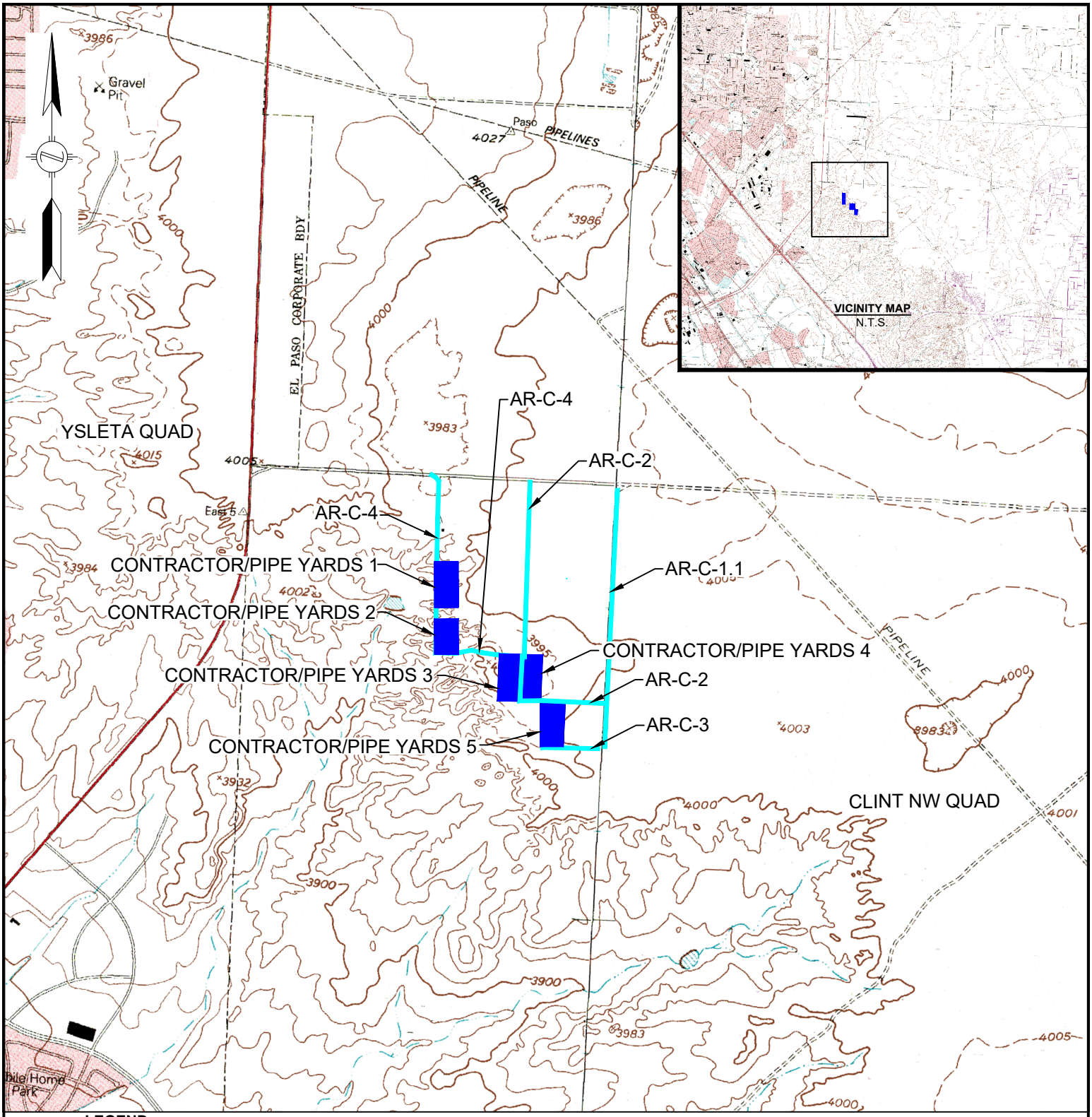
EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED LOOP LINE 1110

HUDSPETH COUNTY, TEXAS

Status:

State:	TX	PIN No:	
County:	EL PASO AND HUDSPETH COUNTIES	Scale:	1"=2,000'
Category:	QUAD MAP		
File Name:	1110_LINE-AR_REV_E		
Drawing No:	5 OF 5	Rev	E



LEGEND

- PROPOSED PIPELINE
- EXISTING EPNG LINESS
- APPROXIMATE PROPERTY/SITE BOUNDARY
- UNIMPROVED ROAD
- LIGHT DUTY ROAD
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- ACCESS ROAD (AR)
- CONTRACTOR/PIPE YARD

0 2000' 4000'

E	UPDATED PER CLIENT COMMENTS	61311	02/15/18
NO.	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

KINDER MORGAN

encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED LOOP LINE 1110
CONTRACTOR/PIPE YARD

EL PASO COUNTY, TEXAS

Status:

State:	TX	PIN No:	
County:	EL PASO AND HUDSPETH COUNTIES	Scale:	1"=2,000'
Category:	QUAD MAP		
File Name:	CONTRACTOR YARDS_REV_E		
Drawing No:	1 OF 1	Rev	E

LAND
PROTECTION EASEMENT
LAND PLAT
RODS
STATION

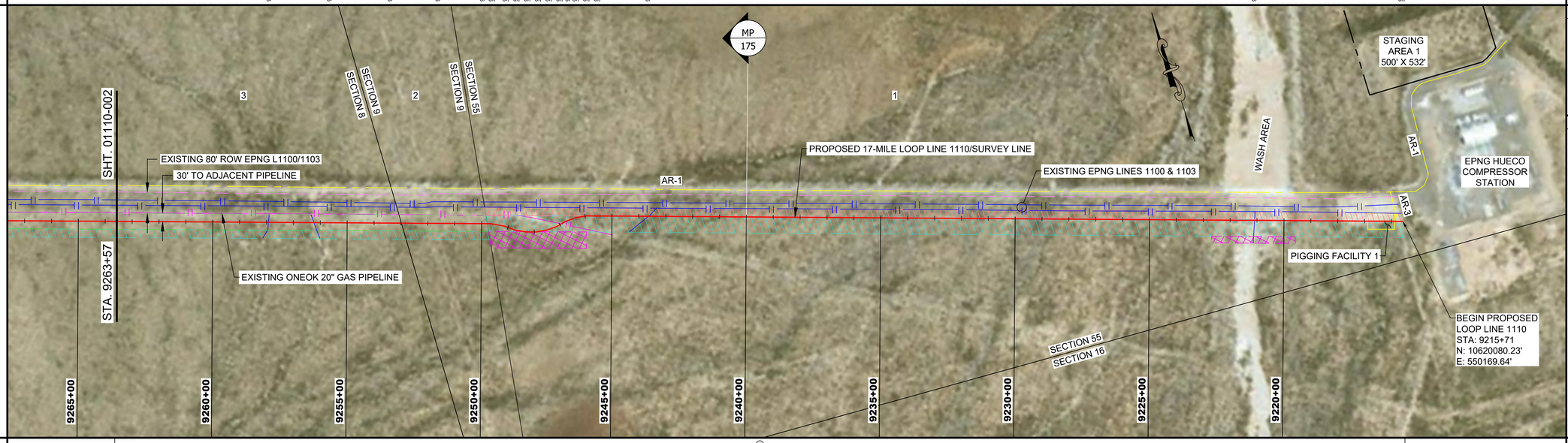
3 — 0003.000.00.00-HU-TX
2 — 0002.000.00.00-HU-TX
1 — 0001.000.00.00-HU-TX

9263+57 | 9252+98 | 9249+78 | 9215+57

PIPELINE STATIONING
CROSSINGS

9257+93 CIL WASH 4
9256+24 CIL WASH 3
9252+98 SECTION LINE
9251+64.4' FENCE W/BARB
9249+78 SECTION LINE
9249+65 P.I. <10°03'19" LT.
9248+74 P.I. <10°00'00" LT.
9248+34 P.I. <10°00'00" RT.
9247+94 P.I. <10°00'00" RT.
9247+54 P.I. <10°00'00" RT.
9247+14 P.I. <10°00'00" RT.
9246+73 FOREIGN PIPELINE CROSSING
9246+73 P.I. <10°00'00" LT.
9246+34 P.I. <10°00'00" LT.
9245+94 P.I. <10°00'00" LT.
9243+93 CIL WASH 2
9221+09 CIL WASH 1
9215+71 BEGIN STA. MLV-20 34-30" LAUNCHER/RECEIVER

ALIGNMENT STRIP MAP
PLAN

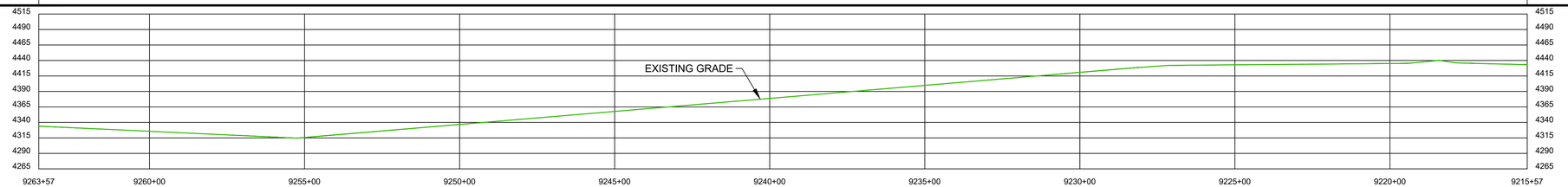


PIPELINE

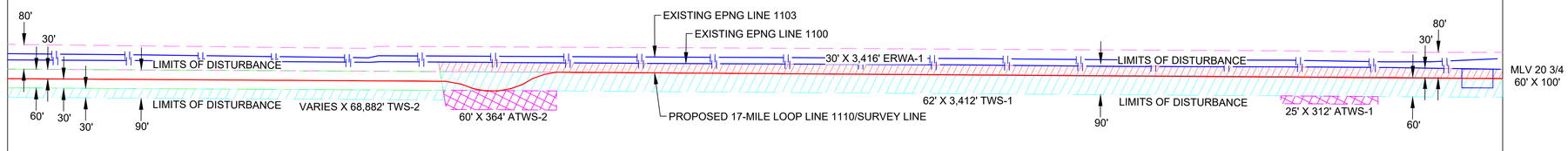
MATERIAL	4800'
COATING	
DESIGN FACTOR	0.72
CLASS LOCATION	CLASS 1
MAOP	809 PSIG

9263+57 — 9215+57

PROFILE
ELEVATION



WORKSPACE
FOOTPRINT



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
- CENTER LINE PIPE
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- EXISTING EASEMENT
- ENTRY/EXIT BORE
- EXISTING ROW WORK AREA (ERWA)
- ADDITIONAL TEMPORARY WORKSPACE (ATWS)
- TEMPORARY WORKSPACE (TWS)
- STAGING AREA

GENERAL NOTES

1. CONTRACTOR TO VERIFY DEPTHS OF COVER FOR ALL PIPELINE CROSSINGS PRIOR TO EXCAVATION.
2. THE MINIMUM PIPELINE DEPTH OF COVER IS 18" IN CONSOLIDATED ROCK.
3. THE MINIMUM PIPELINE DEPTH OF COVER IS 30" IN SOIL UNLESS NOTED OTHERWISE.

OWNERSHIP TABLE

0001.000.00.00-HU-TX EL PASO NATURAL GAS CO.
0002.000.00.00-HU-TX STATE OF TEXAS
0003.000.00.00-HU-TX STATE OF TEXAS

PIPE SUMMARY

1 4800' 30" O.D., 0.260" WT MIN, X65, ERW, 12-14MIL FBE

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

NO.	Revision Description	Project ID	Date
I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18

Notes:

:Reference Drawings

El Paso Natural Gas Company
a Kinder Morgan company

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

:Facility Name

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9215+57 TO STA: 9263+57

Status: ISSUED FOR REVIEW
State: TEXAS | PIN No: 61311
County: HUDSPETH | Scale: 200'
Category: ISSUED FOR REVIEW
File Name: 61311 - ALIGNMENT SHEETS_REVI
Drawing No: SHT. 01110-001 | Rev I

Verification: Jun 22, 2018 - 12:32PM

LAND
PROTECTION EASEMENT
LAND PLAT
RODS
STATION

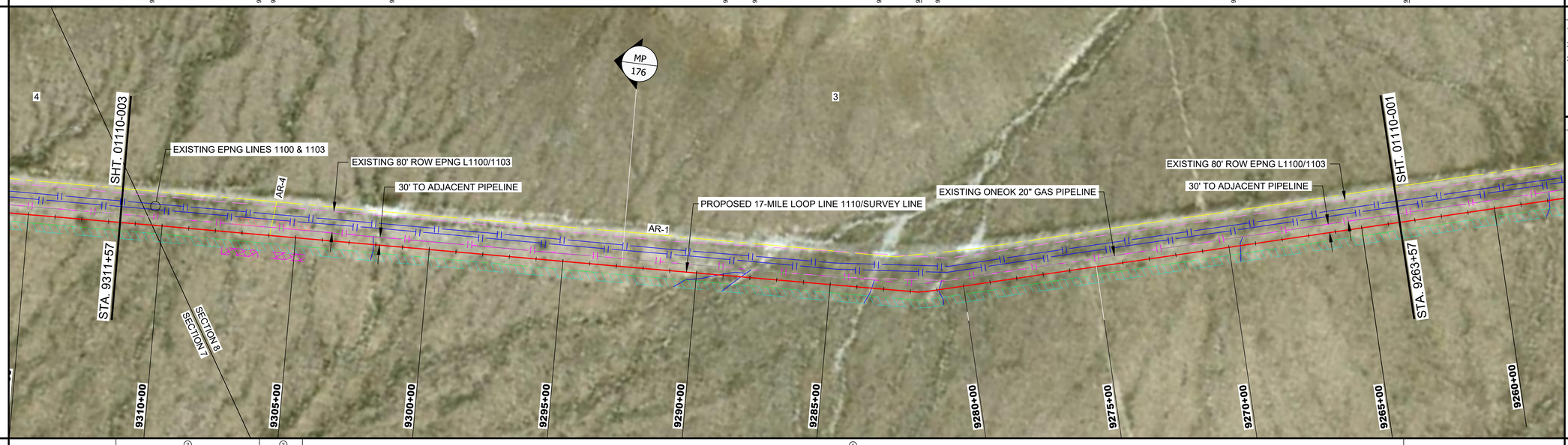
4
0004.000.00.00-HU-TX
3
0003.000.00.00-HU-TX

9311+57
9310+37
9263+57

PIPELINE STATIONING
CROSSINGS

9310+04 SECTION LINE
9300+32 EDGE OF ROAD
9300+79 EDGE OF ROAD
9302+10 CrL WASH 8
9288+17 CrL WASH 7
9288+33 CrL WASH 7
9283+44 CrL WASH 6
9281+75 P.I. <7°56'41" RT.
9280+92 CrL WASH 6
9269+57 CrL WASH 5
9263+42 P.I. <5°18'58" RT.

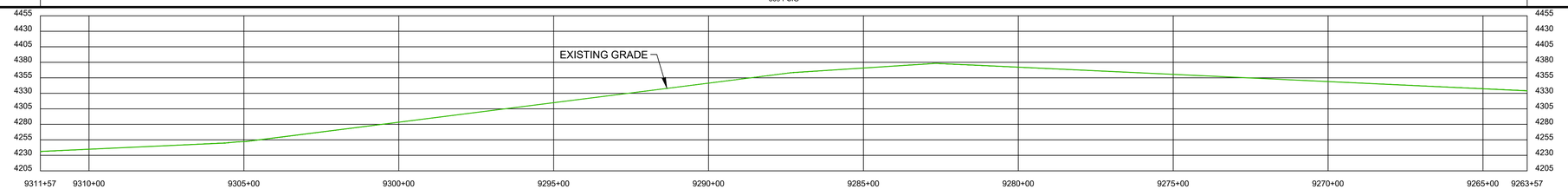
ALIGNMENT STRIP MAP
PLAN



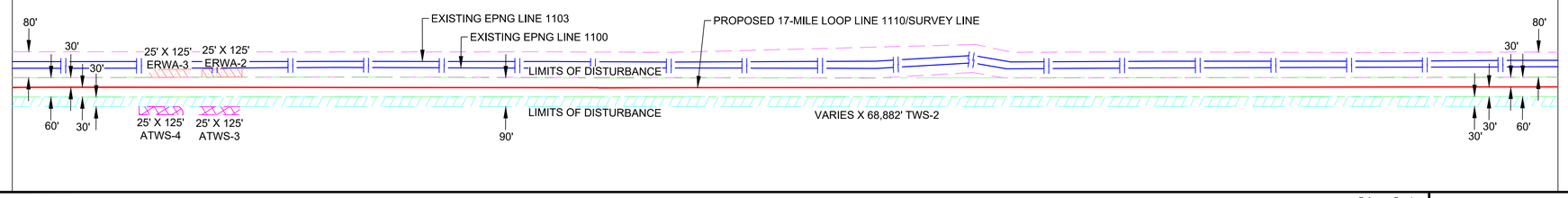
PIPELINE

	9311+57	9306+42	9305+69	9263+57
MATERIAL	② 515'	② 73'	① 4,212'	
COATING		ARO		
DESIGN FACTOR	0.72	0.6	0.72	
CLASS LOCATION	CLASS 1			
MAOP	809 PSIG			

PROFILE
ELEVATION



WORKSPACE
FOOTPRINT



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
- CENTER LINE PIPE
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- EXISTING EASEMENT
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- STAGING AREA

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OWNERSHIP TABLE

0003.000.00.00-HU-TX STATE OF TEXAS
0004.000.00.00-HU-TX STATE OF TEXAS

PIPE SUMMARY

1 4,727' 30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
2 73' 30" O.D., 0.312" WT MIN, X65 MIN, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

:Reference Drawings

:Facility Name

NO.	Revision Description	Project ID	Date
I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
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F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18

Notes:

El Paso Natural Gas Company
a Kinder Morgan company

encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9263+57 TO STA: 9311+57

Status: ISSUED FOR REVIEW
State: TEXAS | PIN No: 61311
County: HUDSPETH | Scale: 200'
Category: ISSUED FOR REVIEW
File Name: 61311 - ALIGNMENT SHEETS_REVI
Drawing No: SHT. 01110-002 | Rev I

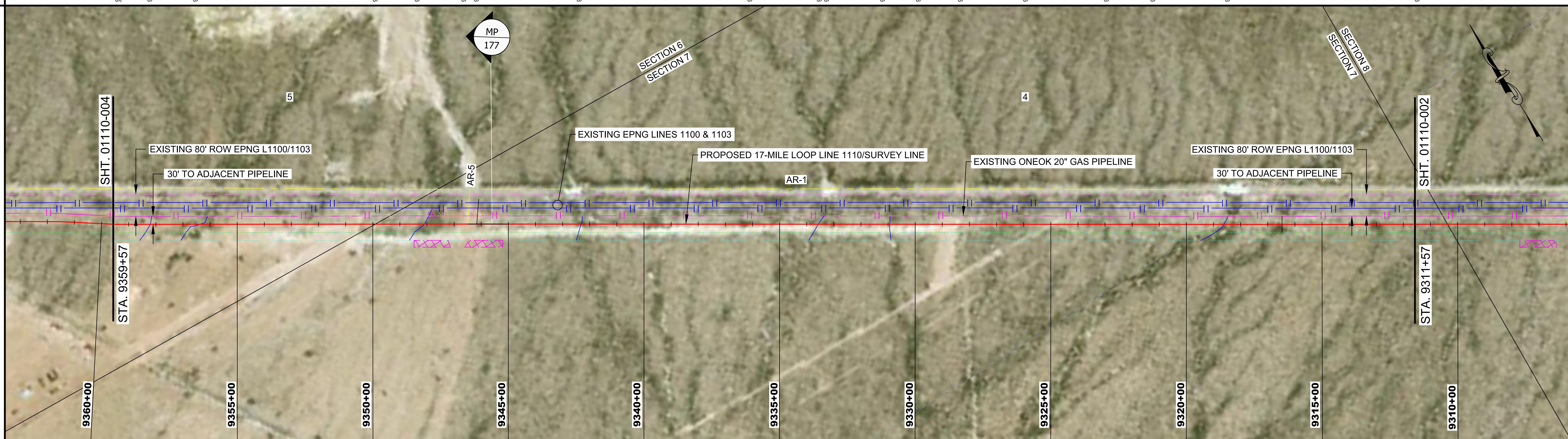
Verification:
Jun 22, 2018 - 1:23PM

LAND	
PROTECTION EASEMENT	
LAND PLAT	5 (0005.000.00.00-HU-EP-TX); 4 (0004.000.00.00-HU-TX)
RODS	
STATION	9359+57; 9349+91; 9311+57

PIPELINE STATIONING — CROSSINGS

9359+50 P.I. <2°52'58" RT.
9358+00 C/L WASH 15
9353+62 C/L WASH 14
9349+91 SECTION LINE
9348+10 C/L WASH 13
9346+73 EDGE OF ROAD
9346+26 EDGE OF ROAD
9342+32 C/L WASH 12
9338+18 EDGE OF ROAD
9333+62 EDGE OF ROAD
9333+57 C/L WASH 11
9330+94 C/L WASH 10
9329+97 EDGE OF ROAD
9328+41 EDGE OF ROAD
9326+02 EDGE OF ROAD
9323+03 EDGE OF ROAD
9321+32 EDGE OF ROAD
9318+63 C/L WASH 9
9320+34 EDGE OF ROAD

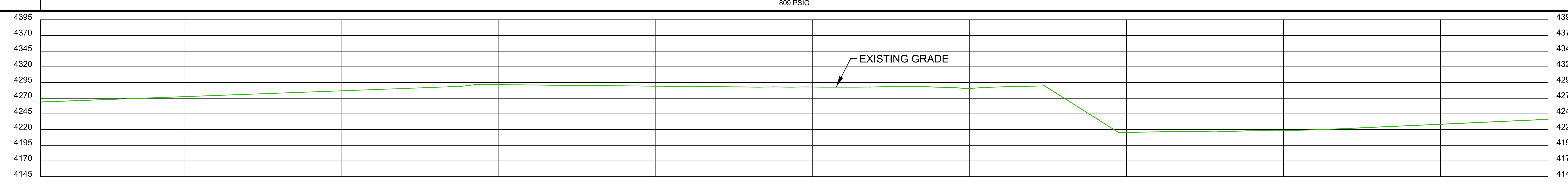
ALIGNMENT STRIP MAP — PLAN



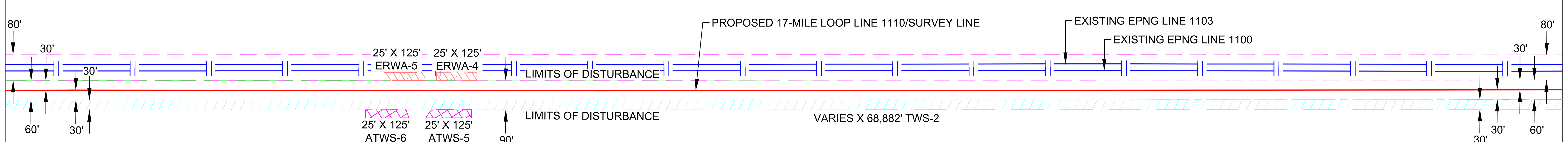
PIPELINE

	9359+57 to 9346+84	9346+84 to 9346+17	9346+17 to 9311+57
MATERIAL	(1) 1,273'	(2) 67'	(1) 3,460'
COATING		ARO	
DESIGN FACTOR	0.72	0.6	0.72
CLASS LOCATION	CLASS 1		
MAOP	809 PSIG		

PROFILE — ELEVATION



WORKSPACE — FOOTPRINT



LEGEND

EDGE OF ROAD
FOREIGN LINE
EXISTING EPNG LINES 1100 & 1103
FENCE
TOP OF BANK
TOE OF BANK
SECTION/PROPERTY LINE
ACCESS ROAD
CENTER LINE PIPE
PERMANENT EASEMENT
TEMPORARY WORKSPACE
EXISTING EASEMENT
ENTRY/EXIT BORE
EXISTING ROW WORK AREA (ERWA)
ADDITIONAL TEMPORARY WORKSPACE (ATWS)
TEMPORARY WORKSPACE (TWS)
STAGING AREA

GENERAL NOTES

1. CONTRACTOR TO VERIFY DEPTHS OF COVER FOR ALL PIPELINE CROSSINGS PRIOR TO EXCAVATION.
2. INDIVIDUAL TRACTS HAVE A MINIMUM OF 48" UNLESS OTHERWISE SPECIFIED.
3. 30" MINIMUM DEPTH IN NORMAL SOIL, 18" MINIMUM DEPTH IN CONSOLIDATED ROCK AND 6' MINIMUM DEPTH IN SAND DUNES.
4. THE MINIMUM PIPELINE DEPTH OF COVER IS 72" IN SAND DUNE AREA.

OWNERSHIP TABLE

0004.000.00.00-HU-TX STATE OF TEXAS
0005.000.00.00-HU-EP-TX WEST TEXAS SAND, LLC

PIPE SUMMARY

1 4,733' 30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
2 67' 30" O.D., 0.312" WT MIN, X65 MIN, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

NO.	Revision Description	Project ID	Date
I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18

Notes:

:Reference Drawings

El Paso Natural Gas Company
a Kinder Morgan company

encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

:Facility Name

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9311+57 TO STA: 9359+57

Status:	ISSUED FOR REVIEW		
State:	TEXAS	PIN No:	61311
County:	HUDSPETH	Scale:	200'
Category:	ISSUED FOR REVIEW		
File Name:	61311 - ALIGNMENT SHEETS_REVI		
Drawing No:	SHT. 01110-003	Rev	I

Verification:

Jul 22, 2018 - 12:53PM

LAND
PROTECTION EASEMENT
LAND PLAT
RODS
STATION

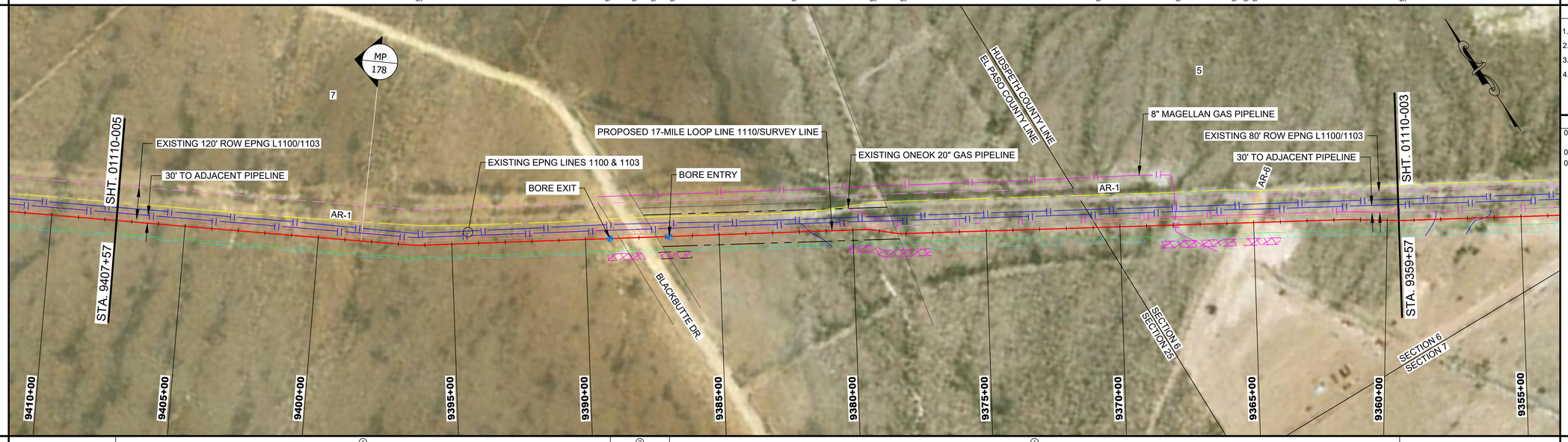
7 | 0007.000.00.00-EP-TX | 0006.000.00.00-RD-EP-TX | EPNG | 5 | 0005.000.00.00-HU-EP-TX

9407+57 | 9388+71 | 9387+33 | 9378+33 | 9359+57

PIPELINE STATIONING
CROSSINGS

9396+34 P.I. <6°39'17" RT. | 9388+08 END BORE | 9388+27 EDGE OF ROAD | 9387+55 EDGE OF ROAD | 9386+87 BEGIN BORE | 9381+62 CIL WASH 16 | 9379+37 P.I. <10°03'24" LT. | 9378+29 P.I. <9°50'59" RT. | 9370+84 COUNTY LINE/SECTION LINE | 9367+93.8" MAGELLAN GAS PIPELINE | 9365+84.4" FENCE W/BARB | 9365+40 EDGE OF ROAD | 9365+06 EDGE OF ROAD | 9361+52 P.I. <2°46'29" LT.

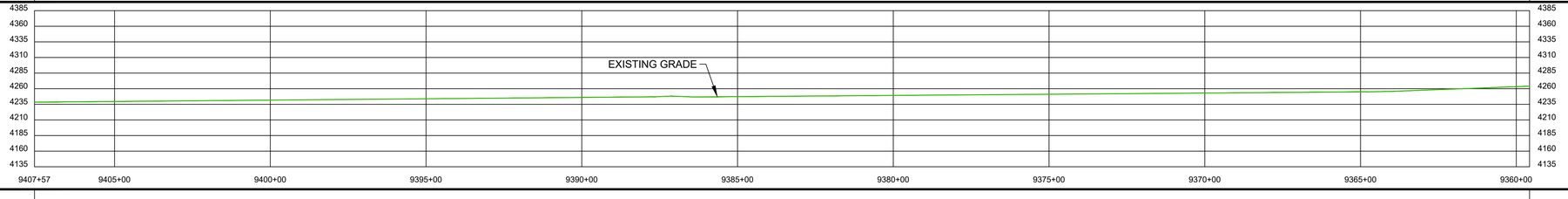
ALIGNMENT STRIP MAP
PLAN



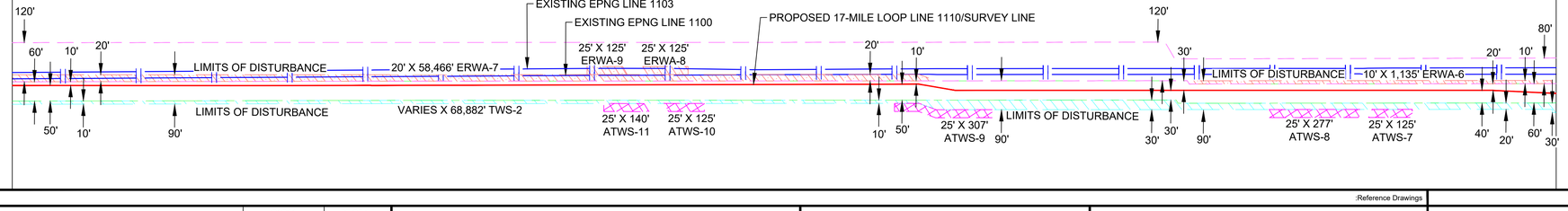
PIPELINE

	9407+57	9388+08	9388+27	9407+57	9359+57
MATERIAL	① 1,849'		② 221'		① 2,730'
COATING			ARO		
DESIGN FACTOR	0.72		0.6		0.72
CLASS LOCATION	CLASS 1				
MAOP	809 PSIG				

PROFILE
ELEVATION



WORKSPACE
FOOTPRINT



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
- CENTER LINE PIPE
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- EXISTING EASEMENT
- ENTRY/EXIT BORE
- EXISTING ROW WORK AREA (ERWA)
- ADDITIONAL TEMPORARY WORKSPACE (ATWS)
- TEMPORARY WORKSPACE (TWS)
- STAGING AREA

GENERAL NOTES

1. CONTRACTOR TO VERIFY DEPTHS OF COVER FOR ALL PIPELINE CROSSINGS PRIOR TO EXCAVATION.
2. INDIVIDUAL TRACTS HAVE A MINIMUM OF 48" UNLESS OTHERWISE SPECIFIED.
3. 30" MINIMUM DEPTH IN NORMAL SOIL, 18" MINIMUM DEPTH IN CONSOLIDATED ROCK AND 6' MINIMUM DEPTH IN SAND DUNES.
4. THE MINIMUM PIPELINE DEPTH OF COVER IS 72" IN SAND DUNE AREA.

OWNERSHIP TABLE

0005.000.00.00-HU-EP-TX	WEST TEXAS SAND LLC
	EL PASO NATURAL GAS CO. EASEMENT
0006.000.00.00-RD-EP-TX	BLACKBUTTE DRIVE
0007.000.00.00-EP-TX	MESQUITE PROPERTIES, L.P.

PIPE SUMMARY

1 4,579' 30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
2 221' 30" O.D., 0.312" WT MIN, X65 MIN, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

:Reference Drawings

I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18
NO.	Revision Description	Project ID	Date

Notes:

El Paso Natural Gas Company
a Kinder Morgan company

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

:Facility Name

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9359+57 TO STA: 9407+57

Status: ISSUED FOR REVIEW

State:	TEXAS	PIN No:	61311
County:	HUDSPETH/EL PASO	Scale:	200'
Category:	ISSUED FOR REVIEW		
File Name:	61311 - ALIGNMENT SHEETS_REVI		
Drawing No:	SHT. 01110-004	Rev	I

Verification: Jun 22, 2018 - 12:54PM

LAND
PROTECTION EASEMENT
LAND PLAT
RODS
STATION

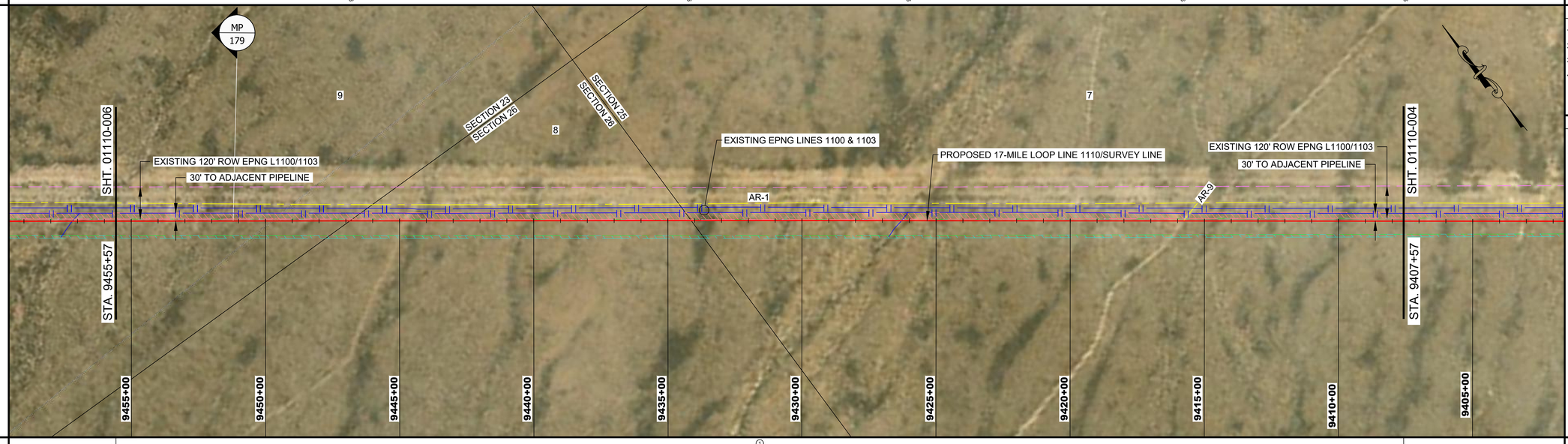
9 — 0009.000.00.00-EP-TX
8 — 0008.000.00.00-EP-TX
7 — 0007.000.00.00-EP-TX

9455+57 | 9446+85 | 9434+13 | 9407+57

PIPELINE STATIONING
CROSSINGS

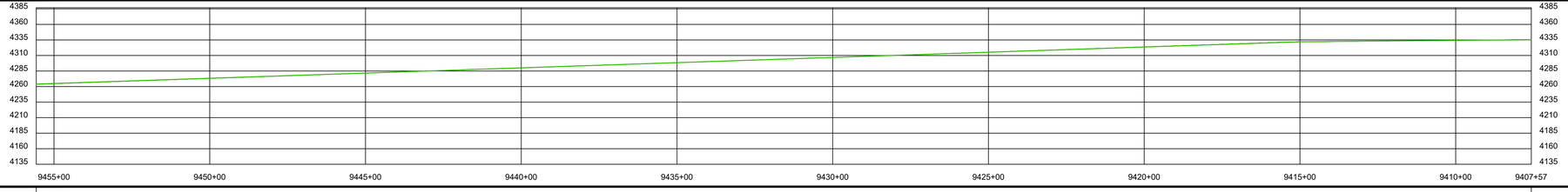
9446+85 SECTION LINE
9434+13 SECTION LINE
9429+88 C/L WASH 17
9415+88 EDGE OF ROAD
9415+74 EDGE OF ROAD

ALIGNMENT STRIP MAP
PLAN

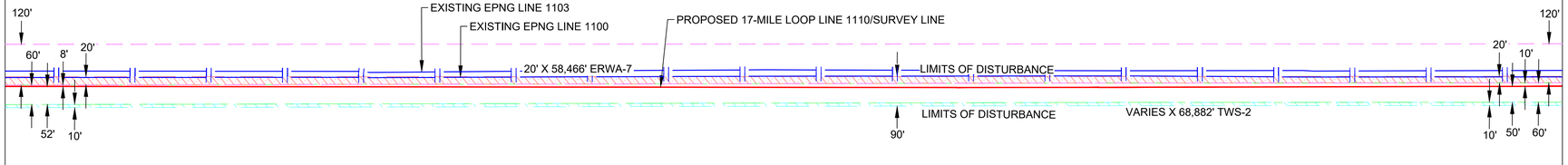


PIPELINE
MATERIAL — 9455+57 — ① 4,800' — 9407+57
COATING
DESIGN FACTOR — 0.72
CLASS LOCATION — CLASS 1
MAOP — 809 PSIG

PROFILE
ELEVATION



WORKSPACE
FOOTPRINT



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
- CENTER LINE PIPE
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- EXISTING EASEMENT
- ENTRY/EXIT BORE
- EXISTING ROW WORK AREA (ERWA)
- ADDITIONAL TEMPORARY WORKSPACE (ATWS)
- TEMPORARY WORKSPACE (TWS)
- STAGING AREA

GENERAL NOTES

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3. 30" MINIMUM DEPTH IN NORMAL SOIL, 18" MINIMUM DEPTH IN CONSOLIDATED ROCK AND 6' MINIMUM DEPTH IN SAND DUNES.
4. THE MINIMUM PIPELINE DEPTH OF COVER IS 72" IN SAND DUNE AREA.

OWNERSHIP TABLE

0007.000.00.00-EP-TX	MESQUITE PROPERTIES, L.P.
0008.000.00.00-EP-TX	MESQUITE PROPERTIES, L.P.
0009.000.00.00-EP-TX	MESQUITE PROPERTIES, L.P.

PIPE SUMMARY

1 4,800' 30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

:Reference Drawings

I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18
NO.	Revision Description	Project ID	Date

Notes:

El Paso Natural Gas Company
a Kinder Morgan company

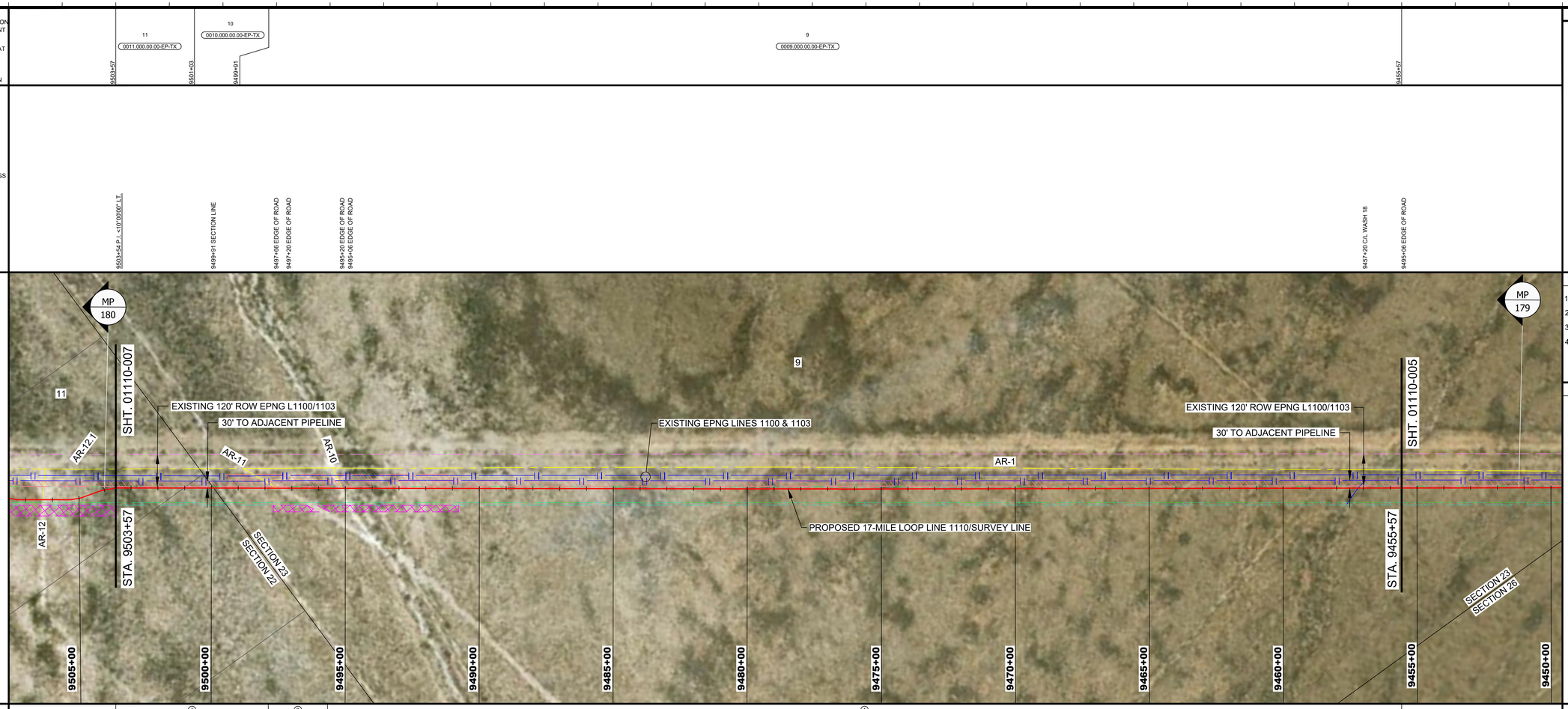
encompass
ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

:Facility Name

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9407+57 TO STA: 9455+57

Status: ISSUED FOR REVIEW
State: TEXAS | PIN No: 61311
County: EL PASO | Scale: 200'
Category: ISSUED FOR REVIEW
File Name: 61311 - ALIGNMENT SHEETS_REVI
Drawing No: SHT. 01110-005 | Rev I

Verification:
Jun 22, 2018 - 12:54PM



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
- CENTER LINE PIPE
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- EXISTING EASEMENT
- ENTRY/EXIT BORE
- EXISTING ROW WORK AREA (ERWA)
- ADDITIONAL TEMPORARY WORKSPACE (ATWS)
- TEMPORARY WORKSPACE (TWS)
- STAGING AREA

GENERAL NOTES

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4. THE MINIMUM PIPELINE DEPTH OF COVER IS 72" IN SAND DUNE AREA.

OWNERSHIP TABLE

0009.000.00.00-EP-TX	MESQUITE PROPERTIES, L.P.
0010.000.00.00-EP-TX	LEE GEORGE BODEN
0011.000.00.00-EP-TX	MARY ELLEN BODEN

PIPE SUMMARY

1	4,734'	30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
2	66'	30" O.D., 0.312" WT MIN, X65 MIN, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18
NO.	Revision Description	Project ID	Date

:Reference Drawings

Notes:

El Paso Natural Gas Company
a Kinder Morgan company

encompass
ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

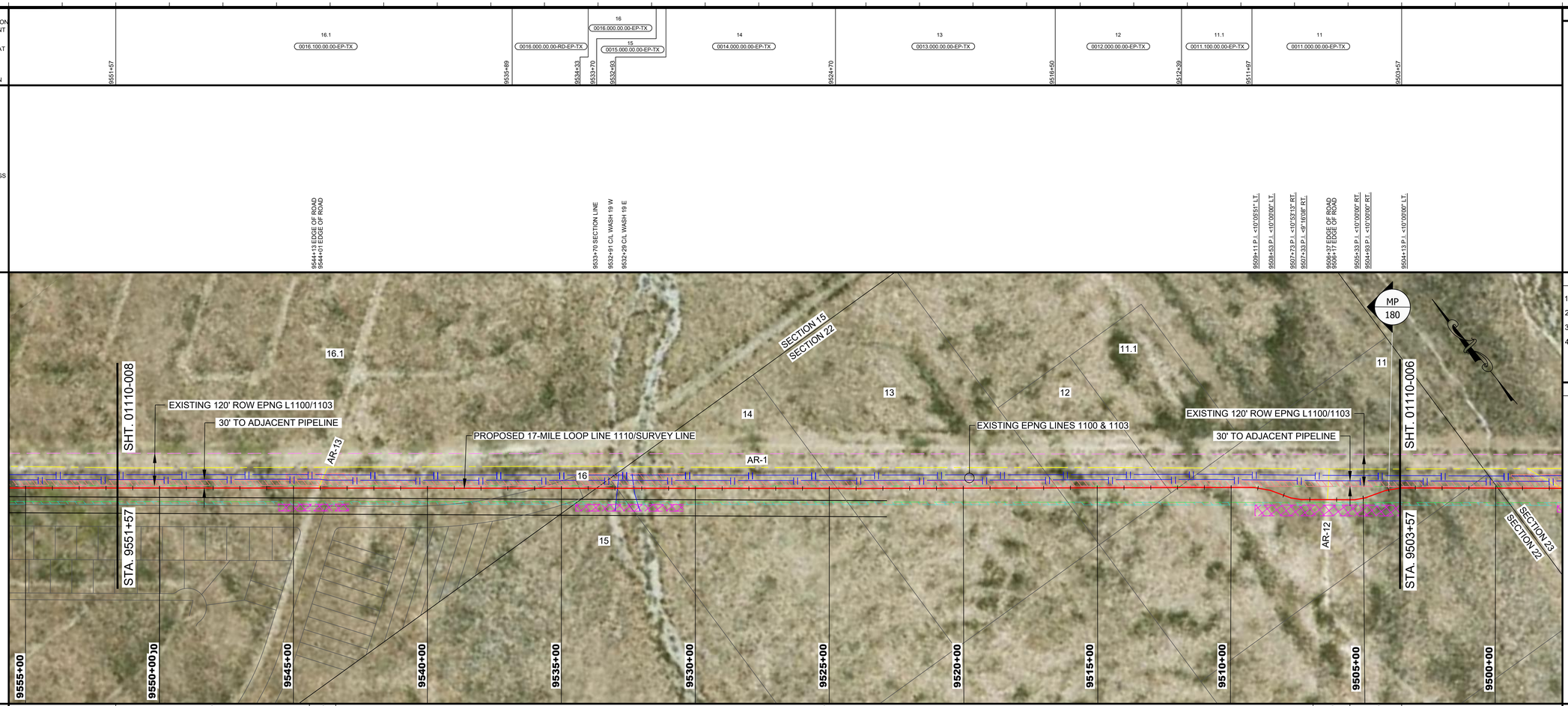
:Facility Name

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9455+57 TO STA: 9503+57

Status: ISSUED FOR REVIEW

State:	TEXAS	PIN No:	61311
County:	EL PASO	Scale:	200'
Category:	ISSUED FOR REVIEW		
File Name:	61311 - ALIGNMENT SHEETS_REVI		
Drawing No:	SHT. 01110-006	Rev	I

Verification: Jun 22, 2018 - 12:54PM



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
- CENTER LINE PIPE
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- EXISTING EASEMENT
- ENTRY/EXIT BORE
- EXISTING ROW WORK AREA (ERWA)
- ADDITIONAL TEMPORARY WORKSPACE (ATWS)
- TEMPORARY WORKSPACE (TWS)
- STAGING AREA

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4. THE MINIMUM PIPELINE DEPTH OF COVER IS 72" IN SAND DUNE AREA.

OWNERSHIP TABLE

0011.000.00.00-EP-TX	MARY ELLEN BODEN
0011.100.00.00-EP-TX	JOANNE J. BRAZELTON
0012.000.00.00-EP-TX	JOANNE J. BRAZELTON
0013.000.00.00-EP-TX	JAMES GEORGE BODEN
0014.000.00.00-EP-TX	DIANE ROSE BODEN
0015.000.00.00-EP-TX	PATRICIA QUINN
0016.000.00.00-EP-TX	HORIZON COMMUNITIES IMPROVEMENT ASSOC.
0016.000.00.00-RD-EP-TX	UNKNOWN
0016.100.00.00-EP-TX	UNKNOWN

PIPE SUMMARY

1	4,728'	30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
2	72'	30" O.D., 0.312" WT MIN, X65 MIN, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

:Reference Drawings

:Facility Name

NO.	Revision Description	Project ID	Date
I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18

Notes:

El Paso Natural Gas Company
a Kinder Morgan company

encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA:9503+57 TO STA: 9551+57

Status: ISSUED FOR REVIEW

State:	TEXAS	PIN No:	61311
County:	EL PASO	Scale:	200'
Category:	ISSUED FOR REVIEW		
File Name:	61311 - ALIGNMENT SHEETS_REVI		
Drawing No:	SHT. 01110-007	Rev	I

Verification:
Jun 22, 2018 - 12:24PM

LAND
PROTECTION EASEMENT
LAND PLAT
RODS
STATION

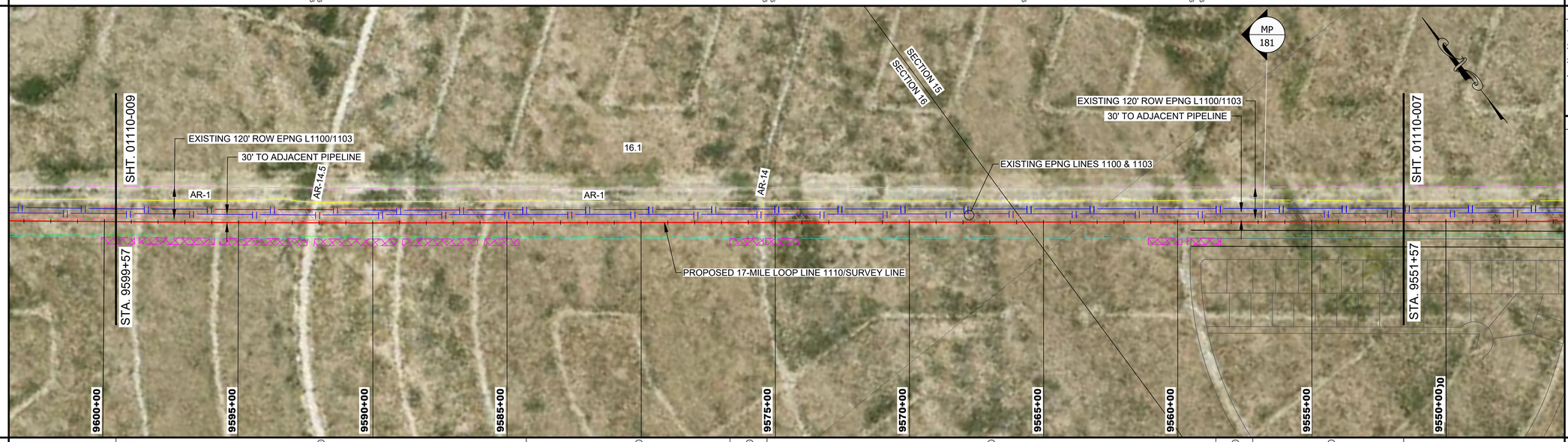
16.1
0016.100.00.00-EP-TX

9599+57
9551+57

PIPELINE STATIONING
CROSSINGS

9592+34 EDGE OF ROAD
9592+06 EDGE OF ROAD
9575+48 EDGE OF ROAD
9575+37 EDGE OF ROAD
9566+72 SECTION LINE
9559+80 EDGE OF ROAD
9559+63 EDGE OF ROAD

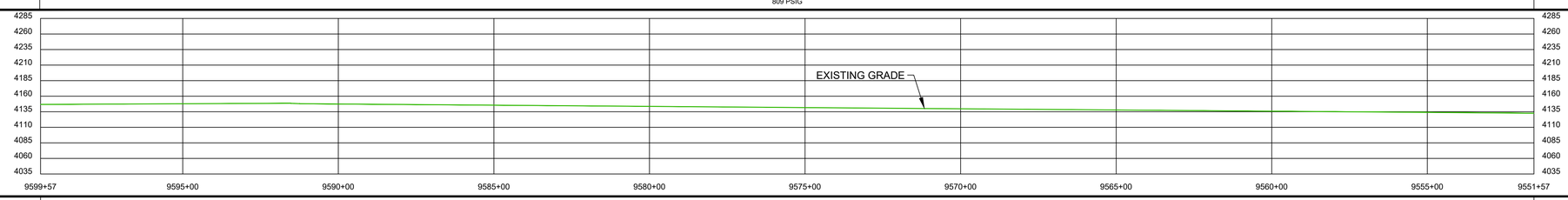
ALIGNMENT STRIP MAP
PLAN



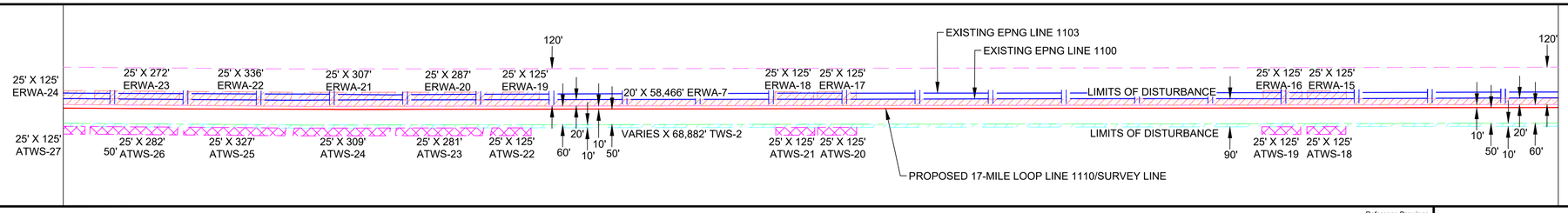
PIPELINE

	9599+57	9584+29	9576+56	9576+27	9559+90	9559+53	9551+57
MATERIAL	② 1,528'	① 873'	② 29'	① 1,537'	② 37'	① 796'	
COATING	ARO		ARO		ARO		
DESIGN FACTOR	0.6	0.72	0.6	0.72	0.6	0.72	
CLASS LOCATION	CLASS 1						
MAOP	809 PSIG						

PROFILE
ELEVATION



WORKSPACE
FOOTPRINT



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
- CENTER LINE PIPE
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- EXISTING EASEMENT
- ENTRY/EXIT BORE
- EXISTING ROW WORK AREA (ERWA)
- ADDITIONAL TEMPORARY WORKSPACE (ATWS)
- TEMPORARY WORKSPACE (TWS)
- STAGING AREA

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3. 30" MINIMUM DEPTH IN NORMAL SOIL, 18" MINIMUM DEPTH IN CONSOLIDATED ROCK AND 6' MINIMUM DEPTH IN SAND DUNES.
4. THE MINIMUM PIPELINE DEPTH OF COVER IS 72" IN SAND DUNE AREA.

OWNERSHIP TABLE

0016.100.00.00-EP-TX	UNKNOWN

PIPE SUMMARY

1	3,206'	30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
2	1,594'	30" O.D., 0.312" WT MIN, X65 MIN, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

:Reference Drawings

	Revision Description	Project ID	Date
I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18

Notes:

El Paso Natural Gas Company
a Kinder Morgan company

encompass
ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

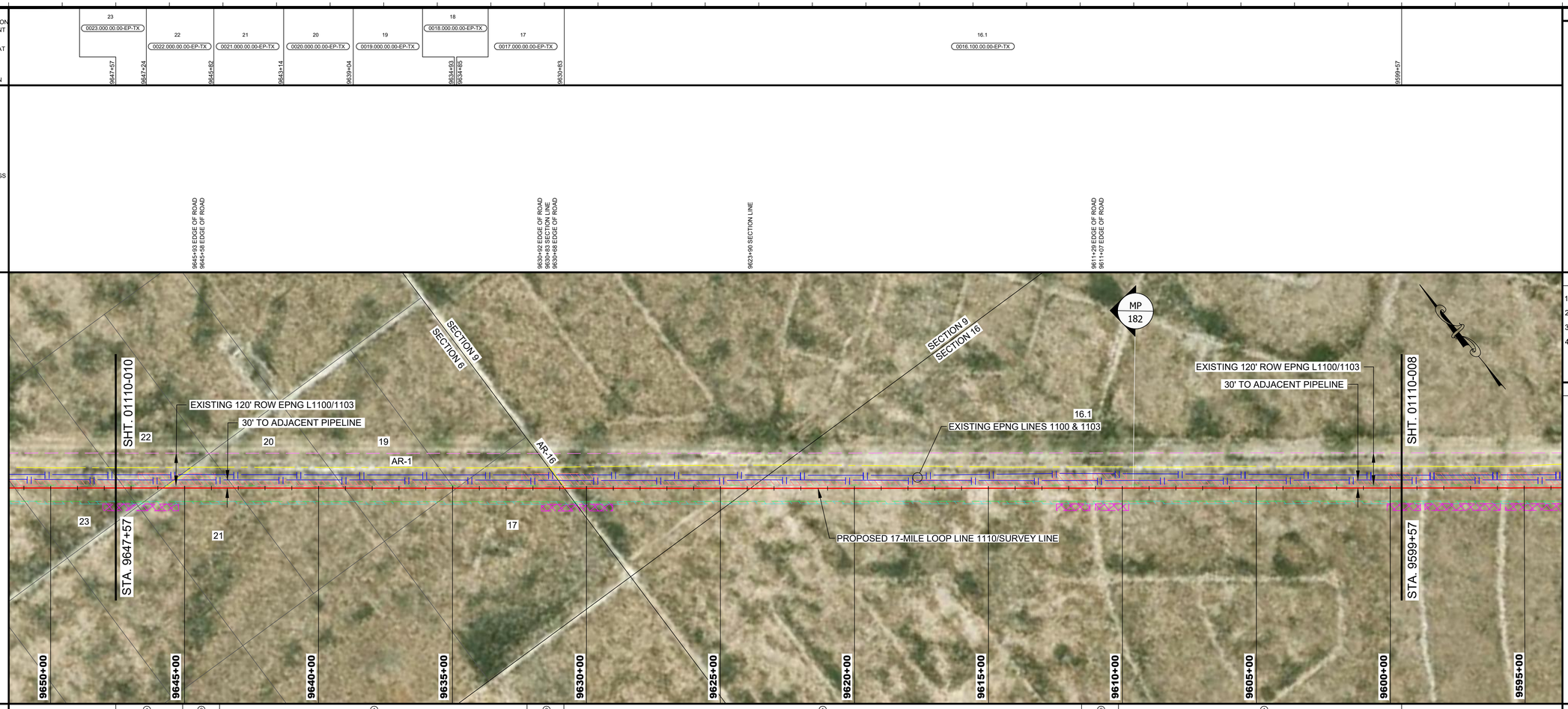
:Facility Name

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9551+57 TO STA: 9599+57

Status: ISSUED FOR REVIEW

State:	TEXAS	PIN No:	61311
County:	EL PASO	Scale:	200'
Category:	ISSUED FOR REVIEW		
File Name:	61311 - ALIGNMENT SHEETS_REVI		
Drawing No:	SHT. 01110-008	Rev	I

Verification:
Jun 22, 2018 - 12:34PM



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
- CENTER LINE PIPE
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- EXISTING EASEMENT
- ENTRY/EXIT BORE
- EXISTING ROW WORK AREA (ERWA)
- ADDITIONAL TEMPORARY WORKSPACE (ATWS)
- TEMPORARY WORKSPACE (TWS)
- STAGING AREA

GENERAL NOTES

1. CONTRACTOR TO VERIFY DEPTHS OF COVER FOR ALL PIPELINE CROSSINGS PRIOR TO EXCAVATION.
2. INDIVIDUAL TRACTS HAVE A MINIMUM OF 48" UNLESS OTHERWISE SPECIFIED.
3. 30" MINIMUM DEPTH IN NORMAL SOIL, 18" MINIMUM DEPTH IN CONSOLIDATED ROCK AND 6' MINIMUM DEPTH IN SAND DUNES.
4. THE MINIMUM PIPELINE DEPTH OF COVER IS 72" IN SAND DUNE AREA.

OWNERSHIP TABLE

0016.100.00.00-EP-TX	UNKNOWN
0017.000.00.00-EP-TX	DENNIS NEEDHAM
0018.000.00.00-EP-TX	ELIZABETH LEDON
0019.000.00.00-EP-TX	VIRGINIA L. ELDER
0020.000.00.00-EP-TX	EUGENE F. & LORENE K. KRUCKEBERG
0021.000.00.00-EP-TX	ALAN R. & MARTHA J. TOLLEFSON
0022.000.00.00-EP-TX	WILLIAM C. & DOROTHY B. PERRY
0023.000.00.00-EP-TX	PHILLIP BISHOP CHARBONNEAU

PIPE SUMMARY

1	4,659'	30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
2	141'	30" O.D., 0.312" WT MIN, X65 MIN, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

:Reference Drawings

:Facility Name

NO.	Revision Description	Project ID	Date
I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18

Notes:

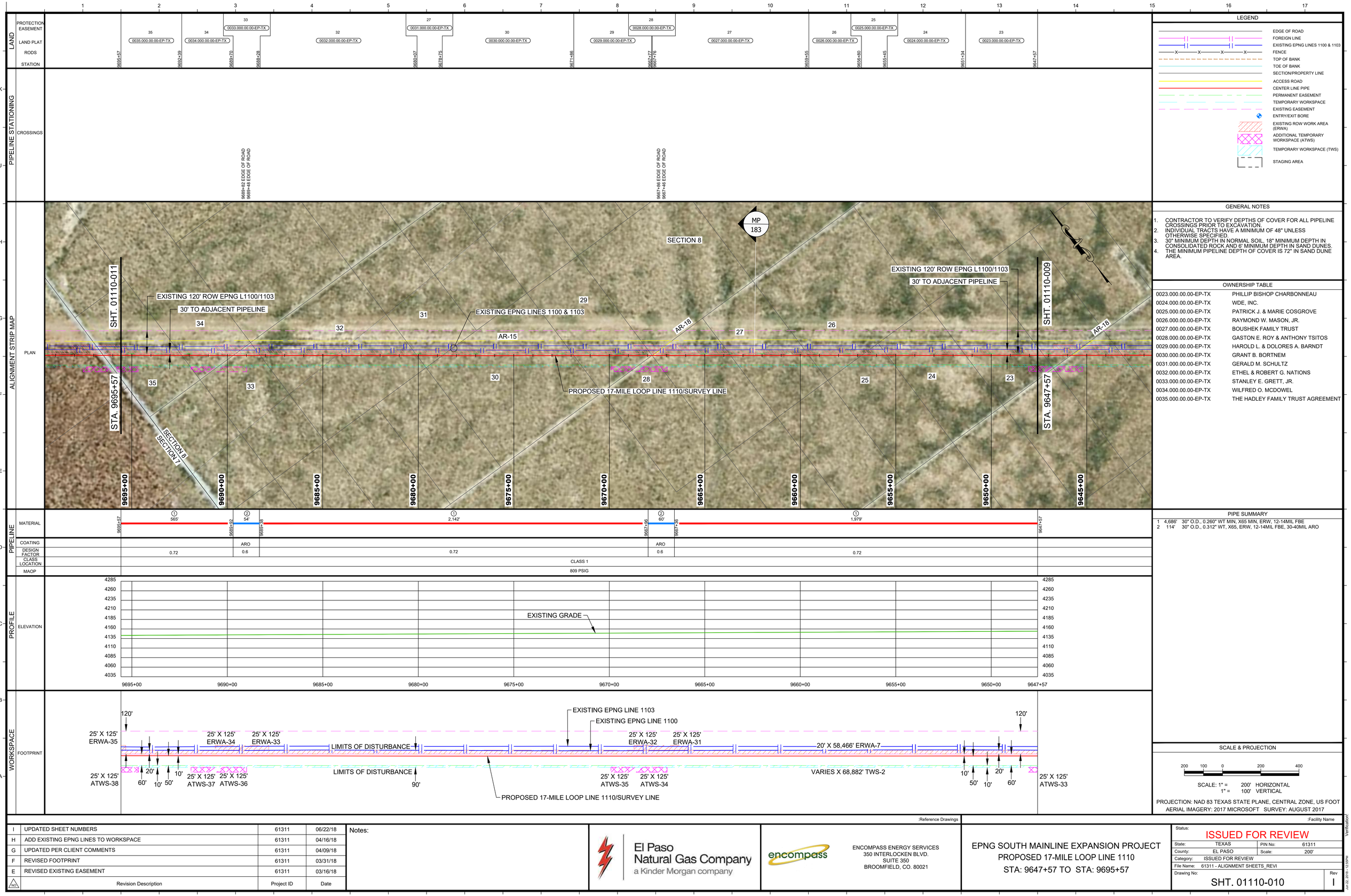
El Paso Natural Gas Company
a Kinder Morgan company

encompass
ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9599+57 TO STA: 9647+57

Status: ISSUED FOR REVIEW
State: TEXAS | PIN No: 61311
County: EL PASO | Scale: 200'
Category: ISSUED FOR REVIEW
File Name: 61311 - ALIGNMENT SHEETS_REVI
Drawing No: SHT. 01110-009 | Rev I

Verification
Jun 22, 2018 - 12:33PM



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
- CENTER LINE PIPE
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- EXISTING EASEMENT
- ENTRY/EXIT BORE
- EXISTING ROW WORK AREA (ERWA)
- ADDITIONAL TEMPORARY WORKSPACE (ATWS)
- TEMPORARY WORKSPACE (TWS)
- STAGING AREA

GENERAL NOTES

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4. THE MINIMUM PIPELINE DEPTH OF COVER IS 72" IN SAND DUNE AREA.

OWNERSHIP TABLE

0023.000.00.00-EP-TX	PHILLIP BISHOP CHARBONNEAU
0024.000.00.00-EP-TX	WDE, INC.
0025.000.00.00-EP-TX	PATRICK J. & MARIE COSGROVE
0026.000.00.00-EP-TX	RAYMOND W. MASON, JR.
0027.000.00.00-EP-TX	BOUSHEK FAMILY TRUST
0028.000.00.00-EP-TX	GASTON E. ROY & ANTHONY TSITOS
0029.000.00.00-EP-TX	HAROLD L. & DOLORES A. BARNDT
0030.000.00.00-EP-TX	GRANT B. BORTNEM
0031.000.00.00-EP-TX	GERALD M. SCHULTZ
0032.000.00.00-EP-TX	ETHEL & ROBERT G. NATIONS
0033.000.00.00-EP-TX	STANLEY E. GRETT, JR.
0034.000.00.00-EP-TX	WILFRED O. MCDOWEL
0035.000.00.00-EP-TX	THE HADLEY FAMILY TRUST AGREEMENT

PIPE SUMMARY

1 4,686' 30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
2 114' 30" O.D., 0.312" WT, X65, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

:Reference Drawings

:Facility Name

No.	Revision Description	Project ID	Date
I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18

Notes:

El Paso Natural Gas Company
a Kinder Morgan company

encompass

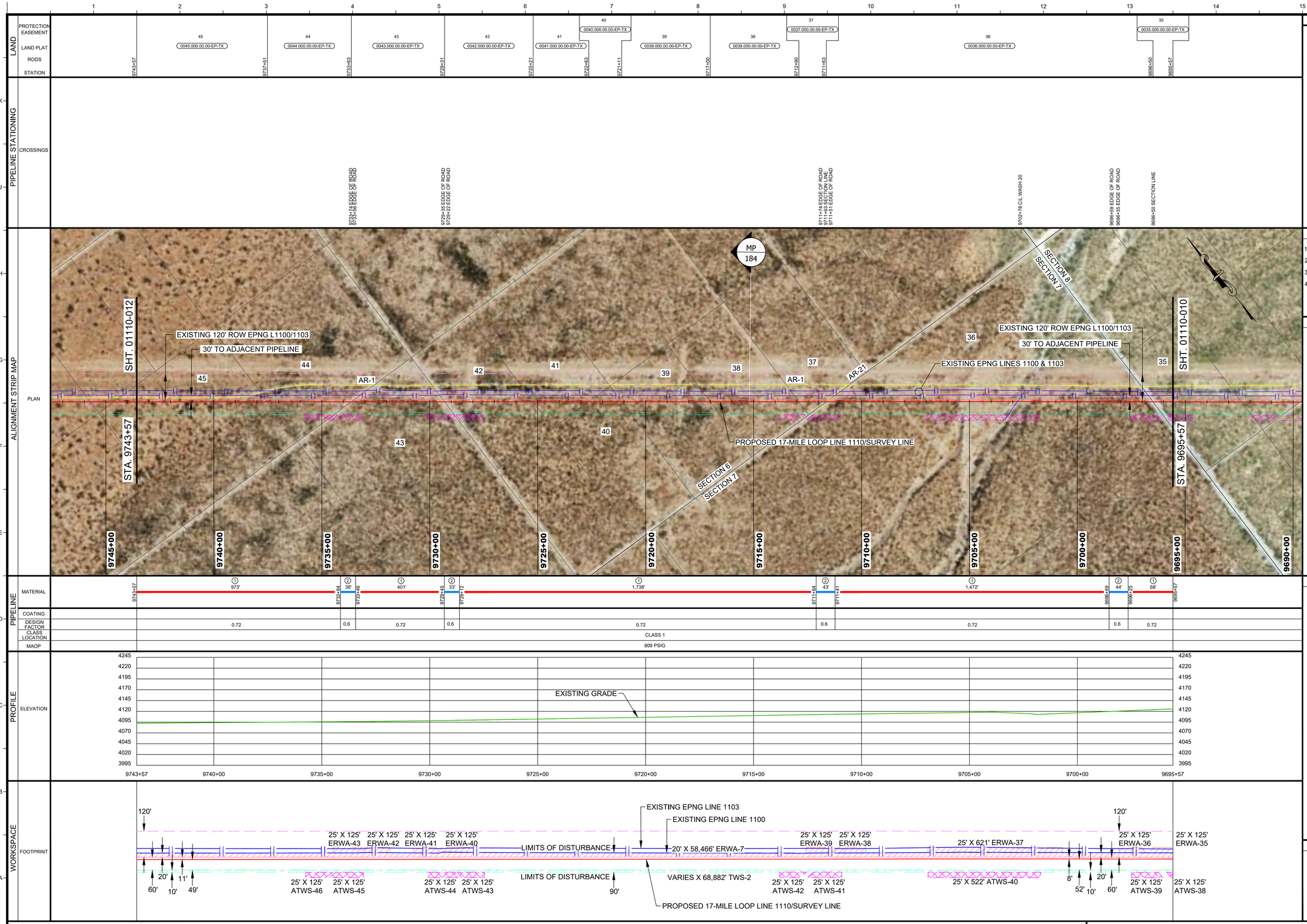
ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9647+57 TO STA: 9695+57

Status: ISSUED FOR REVIEW

State:	TEXAS	PIN No:	61311
County:	EL PASO	Scale:	200'
Category:	ISSUED FOR REVIEW		
File Name:	61311 - ALIGNMENT SHEETS_REVI		
Drawing No:	SHT. 01110-010	Rev	I

Verification
Jun 22, 2018 - 12:39PM



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
- CENTER LINE PIPE
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- EXISTING EASEMENT
- ENTRY/EXIT BORE
- EXISTING ROW WORK AREA (ERWA)
- ADDITIONAL TEMPORARY WORKSPACE (ATWS)
- TEMPORARY WORKSPACE (TWS)
- STAGING AREA

GENERAL NOTES

1. CONTRACTOR TO VERIFY DEPTHS OF COVER FOR ALL PIPELINE CROSSINGS PRIOR TO EXCAVATION.
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4. THE MINIMUM PIPELINE DEPTH OF COVER IS 72" IN SAND DUNE AREA.

OWNERSHIP TABLE

0035.000.00.00-EP-TX	THE HADLEY FAMILY TRUST AGREEMENT
0036.000.00.00-EP-TX	SANDRA ESQUEDA INC.
0037.000.00.00-EP-TX	RICHARD L. GEDELL, ET AL
0038.000.00.00-EP-TX	THOMAS H. EVANS, JR. & EDNA C. EVANS
0039.000.00.00-EP-TX	HAMID R. & BRENDA H. AKHTARI
0040.000.00.00-EP-TX	DAVID & GLORIA LEJEUNE
0041.000.00.00-EP-TX	TED N. & BETTY S. WELCH
0042.000.00.00-EP-TX	RICHARD L. THURM
0043.000.00.00-EP-TX	HAROLD L. & DORIS C. SKINNER
0044.000.00.00-EP-TX	JOHN M. DYER, JR.
0045.000.00.00-EP-TX	ALBERT E. BLOMMAERT

PIPE SUMMARY

1	4,642'	30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
2	158'	30" O.D., 0.312" WT, X65, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

:Reference Drawings

:Facility Name

I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18
NO.	Revision Description	Project ID	Date

Notes:

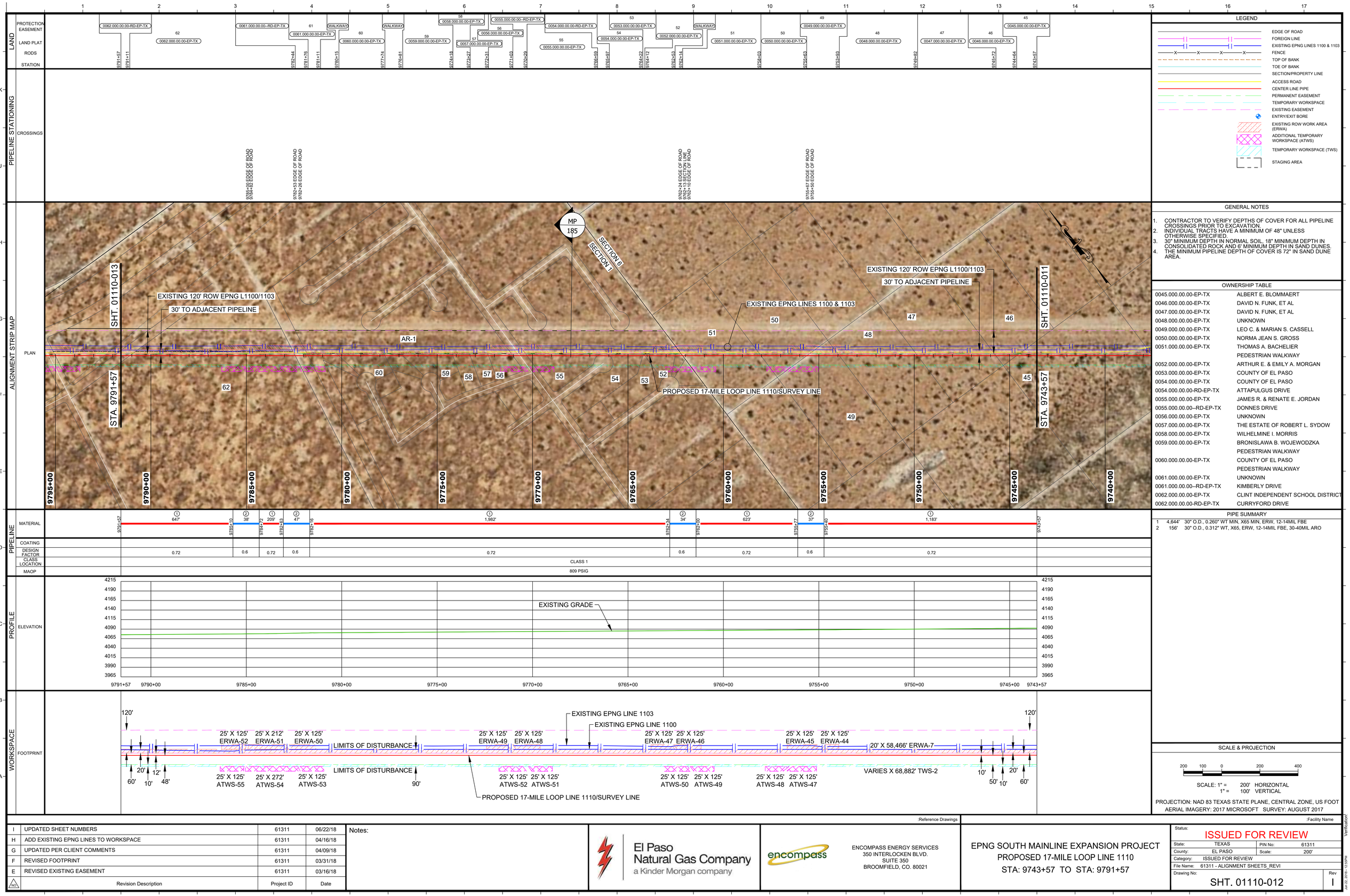
El Paso Natural Gas Company
a Kinder Morgan company

encompass
ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9695+57 TO STA: 9743+57

Status: ISSUED FOR REVIEW
State: TEXAS | PIN No: 61311
County: EL PASO | Scale: 200'
Category: ISSUED FOR REVIEW
File Name: 61311 - ALIGNMENT SHEETS_REVI
Drawing No: SHT. 01110-011
Rev: I

Verification
Jun 22, 2018 - 12:39PM



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
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- EXISTING EASEMENT
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OWNERSHIP TABLE

0045.000.00.00-EP-TX	ALBERT E. BLOMMAERT
0046.000.00.00-EP-TX	DAVID N. FUNK, ET AL
0047.000.00.00-EP-TX	DAVID N. FUNK, ET AL
0048.000.00.00-EP-TX	UNKNOWN
0049.000.00.00-EP-TX	LEO C. & MARIAN S. CASSELL
0050.000.00.00-EP-TX	NORMA JEAN S. GROSS
0051.000.00.00-EP-TX	THOMAS A. BACHELIER
	PEDESTRIAN WALKWAY
0052.000.00.00-EP-TX	ARTHUR E. & EMILY A. MORGAN
0053.000.00.00-EP-TX	COUNTY OF EL PASO
0054.000.00.00-EP-TX	COUNTY OF EL PASO
0054.000.00.00-RD-EP-TX	ATTAPULGUS DRIVE
0055.000.00.00-EP-TX	JAMES R. & RENATE E. JORDAN
0055.000.00.00--RD-EP-TX	DONNES DRIVE
0056.000.00.00-EP-TX	UNKNOWN
0057.000.00.00-EP-TX	THE ESTATE OF ROBERT L. SYDOW
0058.000.00.00-EP-TX	WILHELMINE I. MORRIS
0059.000.00.00-EP-TX	BRONISLAWA B. WOJEWODZKA
	PEDESTRIAN WALKWAY
0060.000.00.00-EP-TX	COUNTY OF EL PASO
	PEDESTRIAN WALKWAY
0061.000.00.00-EP-TX	UNKNOWN
0061.000.00.00--RD-EP-TX	KIMBERLY DRIVE
0062.000.00.00-EP-TX	CLINT INDEPENDENT SCHOOL DISTRICT
0062.000.00.00-RD-EP-TX	CURRYFORD DRIVE

PIPE SUMMARY

1	4,644'	30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
2	156'	30" O.D., 0.312" WT, X65, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

:Reference Drawings

:Facility Name

NO.	Revision Description	Project ID	Date
I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18

Notes:

El Paso Natural Gas Company
a Kinder Morgan company

encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9743+57 TO STA: 9791+57

Status: ISSUED FOR REVIEW

State:	TEXAS	PIN No:	61311
County:	EL PASO	Scale:	200'
Category:	ISSUED FOR REVIEW		
File Name:	61311 - ALIGNMENT SHEETS_REVI		
Drawing No:	SHT. 01110-012	Rev	I

Verification
Jun 22, 2018 - 12:33PM

LAND

PROTECTION EASEMENT

LAND PLAT

RODS

STATION

PIPELINE STATIONING

CROSSINGS

ALIGNMENT STRIP MAP

PLAN

PROFILE

ELEVATION

WORKSPACE

FOOTPRINT

PIPELINE

MATERIAL

COATING

DESIGN FACTOR

CLASS LOCATION

MAOP

LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
- CENTER LINE PIPE
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4. THE MINIMUM PIPELINE DEPTH OF COVER IS 72" IN SAND DUNE AREA.

OWNERSHIP TABLE

0062.000.00.00-RD-EP-TX	CURRYFORD DRIVE
0063.000.00.00-EP-TX	JOANN MCDANIEL
0063.000.00.00-RD-EP-TX	BRUNSVILLE DRIVE
0064.000.00.00-EP-TX	BEVERLY BANK
0065.000.00.00-EP-TX	WILLIAM B. & MARGARET L. LARSEN
0066.000.00.00-EP-TX	WILLIAM F. & AGNES L. GREENE
0067.000.00.00-EP-TX	BEVERLY BANK
0068.000.00.00-EP-TX	ANTONIO & CARMEN H. MALDONADO
0069.000.00.00-EP-TX	UNKNOWN
0070.000.00.00-EP-TX	BEVERLY BANK
0071.000.00.00-EP-TX	UNKNOWN
0072.000.00.00-EP-TX	CHARLES SHOWS
0072.000.00.00-RD-EP-TX	GAVOUR DRIVE
0073.000.00.00-EP-TX	H.C.I.A.
0074.000.00.00-EP-TX	H.C.I.A.
0075.000.00.00-EP-TX	H.C.I.A.
0076.000.00.00-EP-TX	JOBE MATERIALS, L.P.
0077.000.00.00-EP-TX	JOBE MATERIALS, L.P.
0078.000.00.00-EP-TX	JOBE MATERIALS, L.P.
0079.000.00.00-EP-TX	JOBE MATERIALS, L.P.
0080.000.00.00-EP-TX	H.C.I.A.
0081.000.00.00-EP-TX	H.C.I.A.
0082.000.00.00-EP-TX	JOBE MATERIALS, L.P.
0083.000.00.00-EP-TX	JOBE MATERIALS, L.P.
0084.000.00.00-EP-TX	JOBE MATERIALS, L.P.
0084.000.00.00-RD-EP-TX	LA JOYA DRIVE
0085.000.00.00-EP-TX	WILLIAM BUCHNER & JANE E. CALDWELL
0086.000.00.00-EP-TX	JOBE MATERIALS, L.P.
0087.000.00.00-EP-TX	JOBE MATERIALS, L.P.
0088.000.00.00-EP-TX	H.C.I.A.
0089.000.00.00-EP-TX	H.C.I.A.
0090.000.00.00-EP-TX	MORRIS & SHIRLEY BERK
0091.000.00.00-EP-TX	KARIN L. JOACHIMOUSKI
0092.000.00.00-EP-TX	BILLY A. OHL, JR.
0093.000.00.00-EP-TX	BILLY A. OHL, JR.
0094.000.00.00-EP-TX	RICHARD E. DAY
0095.000.00.00-EP-TX	H.C.I.A.
0096.000.00.00-EP-TX	H.C.I.A.
0097.000.00.00-EP-TX	H.C.I.A.
0098.000.00.00-EP-TX	H.C.I.A.
0099.000.00.00-EP-TX	H.C.I.A.
0100.000.00.00-EP-TX	H.C.I.A.
0100.000.00.00-RD-EP-TX	UNKNOWN ROAD
0101.000.00.00-EP-TX	JOBE MATERIALS, L.P.
0102.000.00.00-EP-TX	JOBE MATERIALS, L.P.

PIPE SUMMARY

1	4,491'	30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
2	309'	30" O.D., 0.312" WT, X65, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

:Reference Drawings

:Facility Name

NO.	Revision Description	Project ID	Date
I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18

Notes:

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encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9791+57 TO STA: 9839+57

Status: ISSUED FOR REVIEW

State:	TEXAS	PIN No:	61311
County:	EL PASO	Scale:	200'
Category:	ISSUED FOR REVIEW		
File Name:	61311 - ALIGNMENT SHEETS_REVI		
Drawing No:	SHT. 01110-013	Rev	I

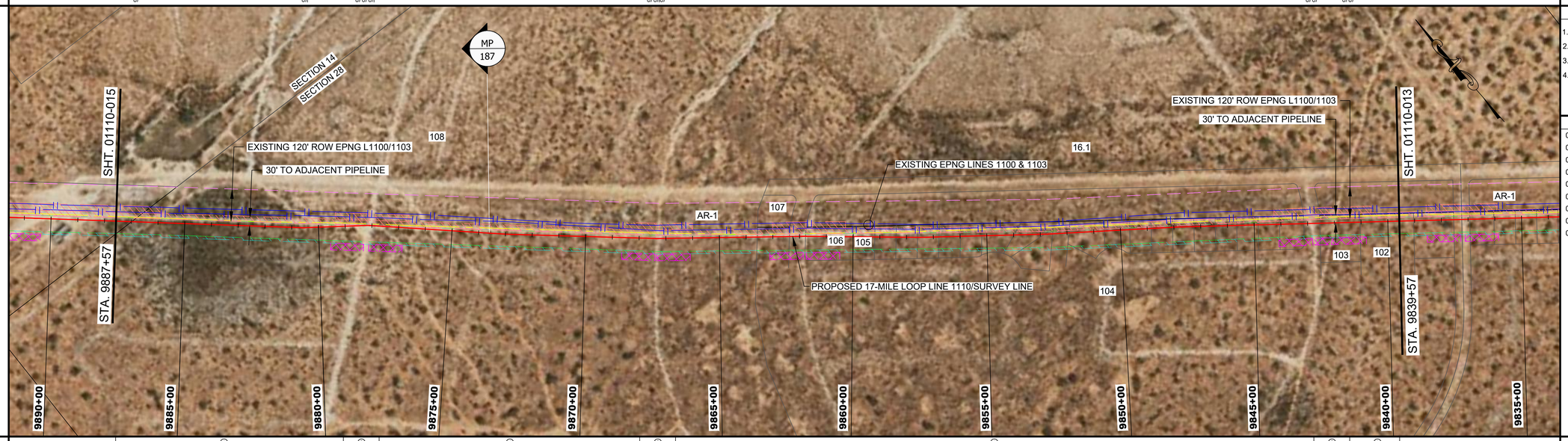
Verification:
Jun 22, 2018 - 12:55PM

LAND
PROTECTION EASEMENT
LAND PLAT
RODS
STATION

PIPELINE STATIONING
CROSSINGS

9887+57 SECTION LINE
9880+61 P.I. <3°59'13" RT.
9878+21 EDGE OF ROAD
9878+41 EDGE OF ROAD
9878+12 P.I. <5°36'39" LT.
9867+48 EDGE OF ROAD
9867+38 P.I. <2°30'27" RT.
9867+22 EDGE OF ROAD
9842+83 EDGE OF ROAD
9842+93 EDGE OF ROAD
9842+06 EDGE OF ROAD
9841+96 EDGE OF ROAD

ALIGNMENT STRIP MAP
PLAN

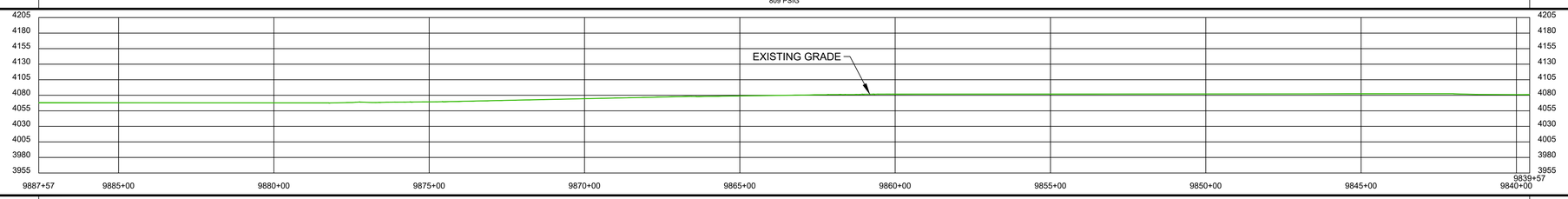


PIPELINE
MATERIAL

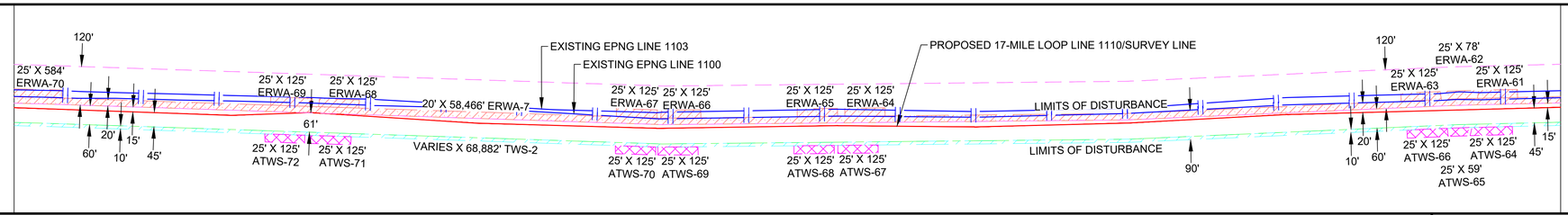
9887+57	① 926'	9878+21	② 25'	9878+46	① 1,056'	9867+40	② 38'	9867+78	① 2,409'	9842+03	② 118'	9841+85	① 228'	9839+57

COATING
DESIGN FACTOR: 0.72 | 0.6 | 0.72 | 0.6 | 0.72 | 0.6 | 0.72
CLASS LOCATION: CLASS 1
MAOP: 809 PSIG

PROFILE
ELEVATION



WORKSPACE
FOOTPRINT



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
- CENTER LINE PIPE
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- EXISTING EASEMENT
- ENTRY/EXIT BORE
- EXISTING ROW WORK AREA (ERWA)
- ADDITIONAL TEMPORARY WORKSPACE (ATWS)
- TEMPORARY WORKSPACE (TWS)
- STAGING AREA

GENERAL NOTES

1. CONTRACTOR TO VERIFY DEPTHS OF COVER FOR ALL PIPELINE CROSSINGS PRIOR TO EXCAVATION.
2. INDIVIDUAL TRACTS HAVE A MINIMUM OF 48" UNLESS OTHERWISE SPECIFIED.
3. 30" MINIMUM DEPTH IN NORMAL SOIL, 18" MINIMUM DEPTH IN CONSOLIDATED ROCK AND 6' MINIMUM DEPTH IN SAND DUNES.
4. THE MINIMUM PIPELINE DEPTH OF COVER IS 72" IN SAND DUNE AREA.

OWNERSHIP TABLE

0102.000.00.00-EP-TX	JOBE MATERIALS, L.P.
0103.000.00.00-EP-TX	H.C.I.A.
0103.000.00.00-RD-EP-TX	BONIFAY DRIVE
0104.000.00.00-EP-TX	HORIZON CITY ESTATES
0105.000.00.00-EP-TX	H.C.I.A.
0106.000.00.00-EP-TX	KAMLA I. JUMAN
0106.000.00.00-RD-EP-TX	BONIFAY DRIVE
0107.000.00.00-EP-TX	RONALD D. & LINDA C. WATSON
0108.000.00.00-EP-TX	UNKNOWN

PIPE SUMMARY

1	4,619'	30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
2	181'	30" O.D., 0.312" WT, X65, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

:Reference Drawings

:Facility Name

	Revision Description	Project ID	Date
I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18

Notes:

El Paso Natural Gas Company
a Kinder Morgan company

encompass
ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9839+57 TO STA: 9887+57

Status: ISSUED FOR REVIEW
State: TEXAS | PIN No: 61311
County: EL PASO | Scale: 200'
Category: ISSUED FOR REVIEW
File Name: 61311 - ALIGNMENT SHEETS_REVI
Drawing No: SHT. 01110-014
Rev I

Verification:
Jun 22, 2018 - 12:59PM

LAND
PROTECTION EASEMENT
LAND PLAT
RODS
STATION

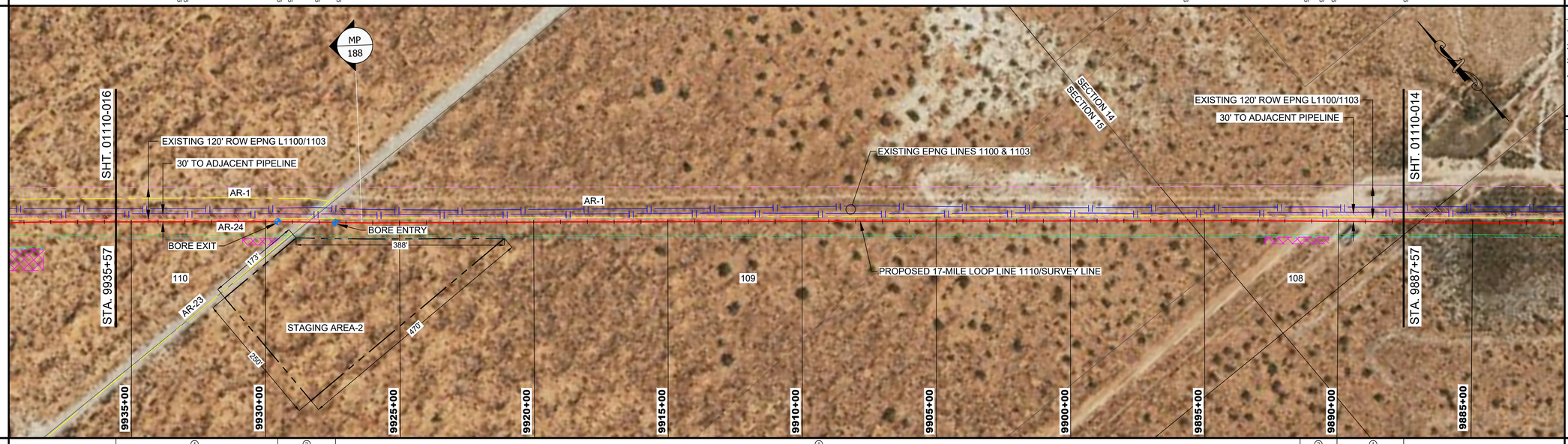
110 — 0110.000.00.00-EP-TX
109 — 0109.000.00.00-EP-TX
108 — 0108.000.00.00-EP-TX

9935+57 | 9928+41 | 9905+59 | 9887+57

PIPELINE STATIONING
CROSSINGS

9935+08 EDGE OF ROAD
9933+04 EDGE OF ROAD
9929+54 END BORE
9929+15 EDGE OF ROAD
9928+14 EDGE OF ROAD
9927+39 BEGIN BORE
9905+59 SECTION LINE
9891+27 EDGE OF ROAD
9890+71 ONEOK GAS PIPELINE
9890+25 EDGE OF ROAD
9888+03 ONEOK GAS PIPELINE

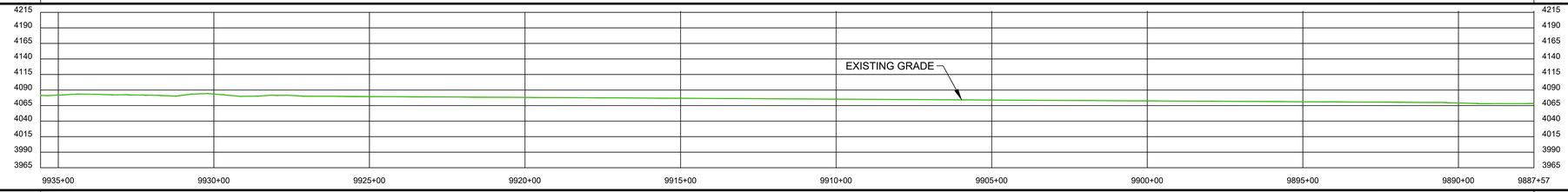
ALIGNMENT STRIP MAP
PLAN



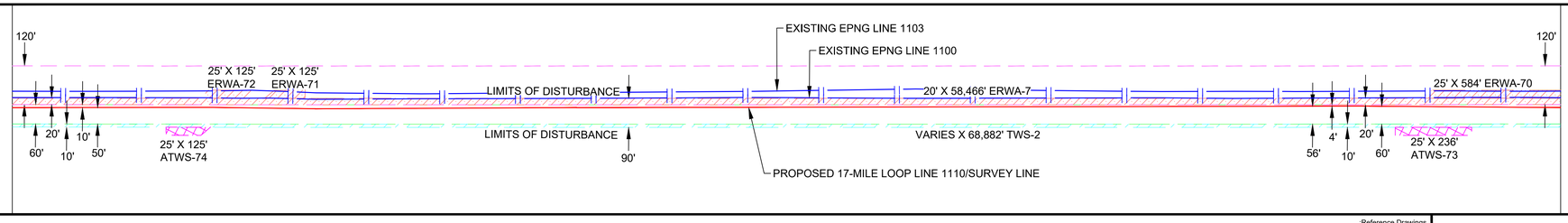
PIPELINE

	9935+57	9929+54	9927+39	9891+27	9890+15	9887+57
MATERIAL	① 603'	② 215'	① 3,602'	② 122'	① 258'	
COATING		ARO		ARO		
DESIGN FACTOR	0.72	0.6	0.72	0.6	0.72	
CLASS LOCATION	CLASS 1					
MAOP	809 PSIG					

PROFILE
ELEVATION



WORKSPACE
FOOTPRINT



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
- CENTER LINE PIPE
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- EXISTING EASEMENT
- ENTRY/EXIT BORE
- EXISTING ROW WORK AREA (ERWA)
- ADDITIONAL TEMPORARY WORKSPACE (ATWS)
- TEMPORARY WORKSPACE (TWS)
- STAGING AREA

GENERAL NOTES

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3. 30" MINIMUM DEPTH IN NORMAL SOIL, 18" MINIMUM DEPTH IN CONSOLIDATED ROCK AND 6' MINIMUM DEPTH IN SAND DUNES.
4. THE MINIMUM PIPELINE DEPTH OF COVER IS 72" IN SAND DUNE AREA.

OWNERSHIP TABLE

0108.000.00.00-EP-TX	UNKNOWN
0109.000.00.00-EP-TX	JOHN ELIAS, ET AL
0110.000.00.00-EP-TX	GCC SUN CITY MATERIALS, LLC

PIPE SUMMARY

1 4,463' 30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
2 337' 30" O.D., 0.312" WT MIN, X65 MIN, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

:Reference Drawings

:Facility Name

NO.	Revision Description	Project ID	Date
I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18

Notes:

El Paso Natural Gas Company
a Kinder Morgan company

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9887+57 TO STA: 9935+57

Status: ISSUED FOR REVIEW
State: TEXAS | PIN No: 61311
County: EL PASO | Scale: 200'
Category: ISSUED FOR REVIEW
File Name: 61311 - ALIGNMENT SHEETS_REVI
Drawing No: SHT. 01110-015 | Rev I

Verification
Jun 22, 2018 - 12:39PM

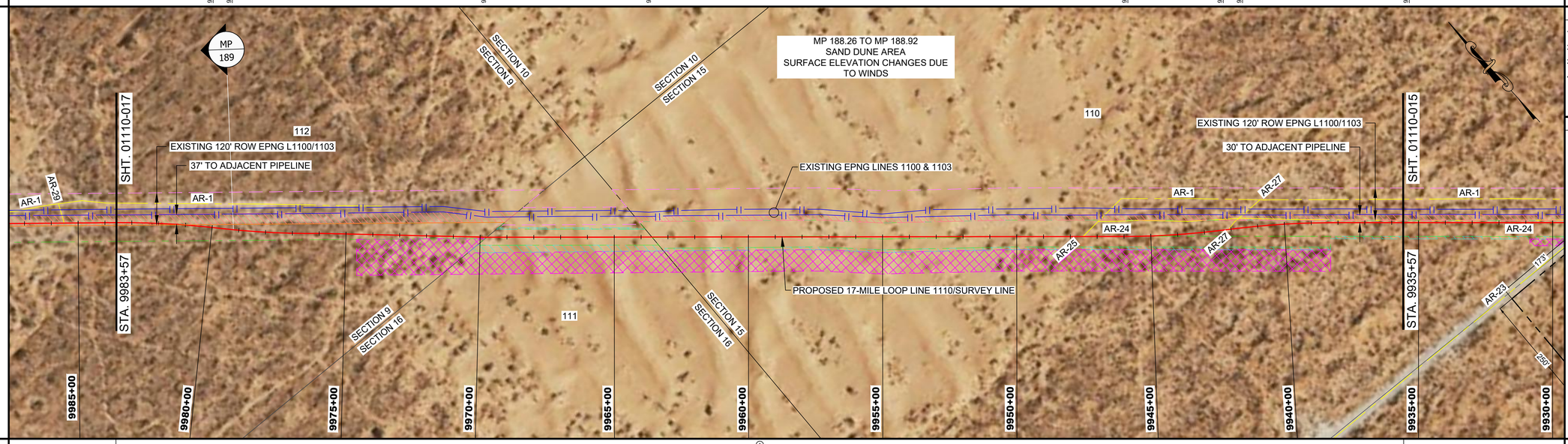
LAND
PROTECTION EASEMENT
LAND PLAT
RODS
STATION

112 — 0112.000.00.00-EP-TX
111 — 0111.000.00.00-EP-TX
110 — 0110.000.00.00-EP-TX
9983+57
9969+75
9963+60
9935+57

PIPELINE STATIONING
CROSSINGS

9980+16 P.I. <3°20'15" LT.
9979+44 P.I. <3°23'52" RT.
9969+75 SECTION LINE
9963+60 SECTION LINE
9948+08 P.I. <3°23'52" RT.
9942+50 P.I. <3°23'52" RT.
9941+78 P.I. <3°20'21" LT.
9938+27 P.I. <3°21'09" LT.

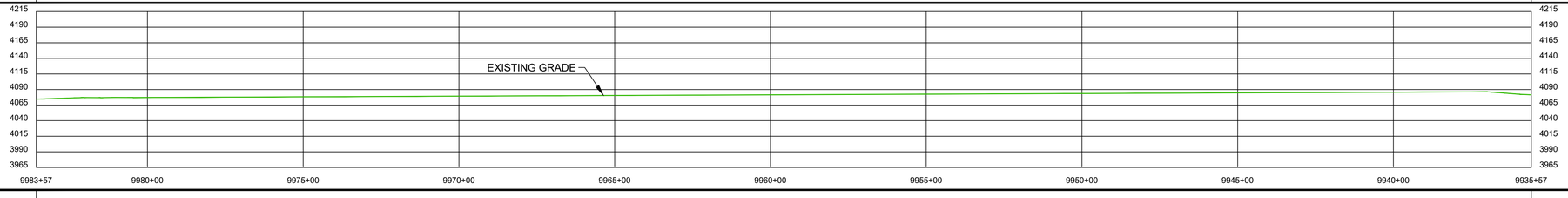
ALIGNMENT STRIP MAP
PLAN



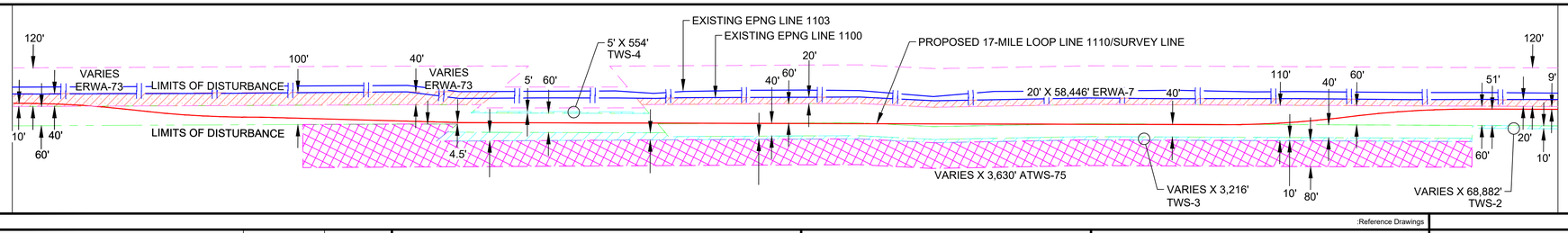
PIPELINE

MATERIAL	9983+57	9935+57
	① 4,800'	
COATING		
DESIGN FACTOR	0.72	
CLASS LOCATION	CLASS 1	
MAOP	809 PSIG	

PROFILE
ELEVATION



WORKSPACE
FOOTPRINT



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
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- ADDITIONAL TEMPORARY WORKSPACE (ATWS)
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OWNERSHIP TABLE

0110.000.00.00-EP-TX	GCC SUN CITY MATERIALS, LLC
0111.000.00.00-EP-TX	UNKNOWN
0112.000.00.00-EP-TX	162 EAST RANCHO GRANDE, LLC

PIPE SUMMARY

1 4,800' 30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

NO.	Revision Description	Project ID	Date
I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18

Notes:

:Reference Drawings

:Facility Name

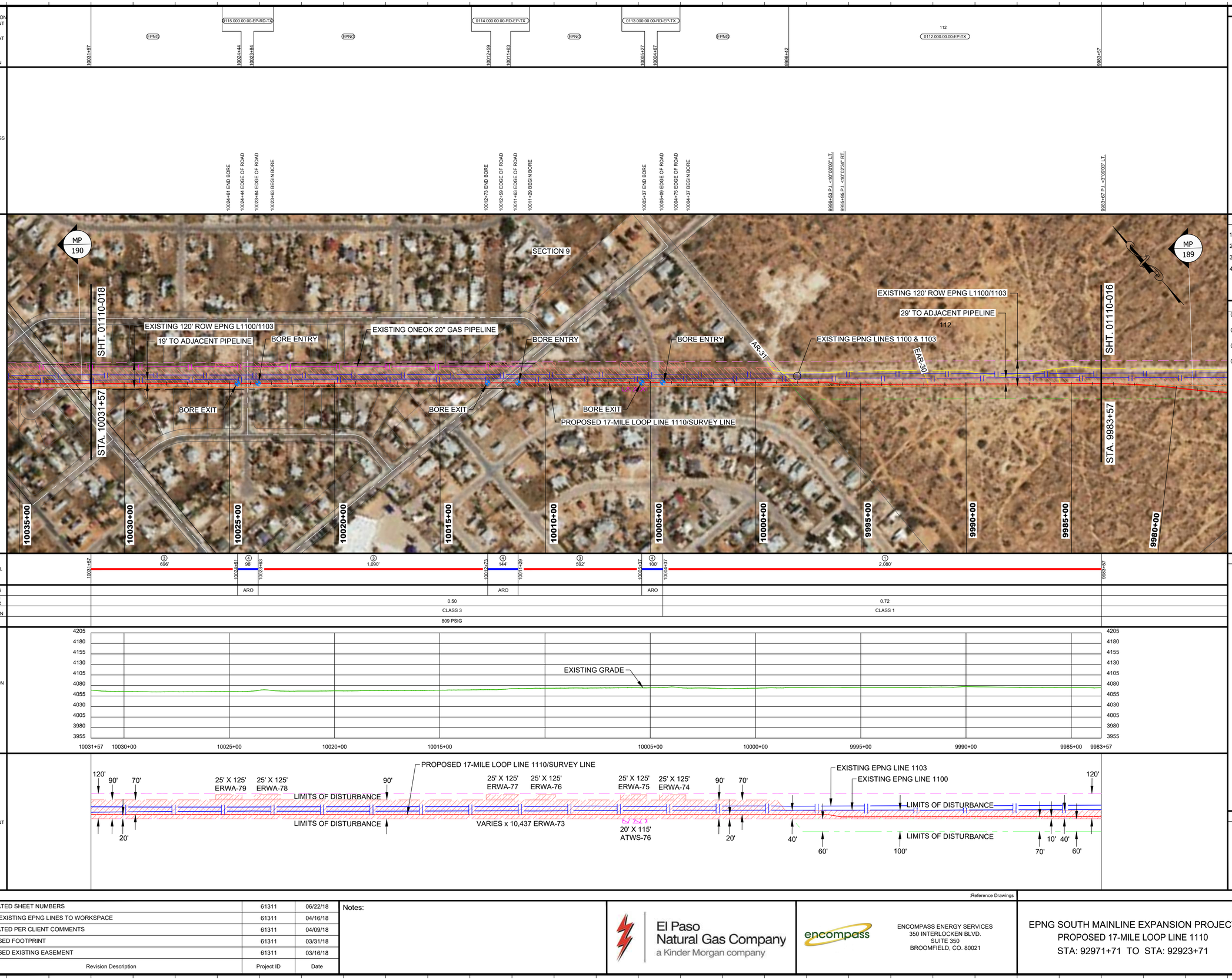
El Paso Natural Gas Company
a Kinder Morgan company

encompass
ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 9935+57 TO STA: 9983+57

Status: ISSUED FOR REVIEW
State: TEXAS | PIN No: 61311
County: EL PASO | Scale: 200'
Category: ISSUED FOR REVIEW
File Name: 61311 - ALIGNMENT SHEETS_REVI
Drawing No: SHT. 01110-016
Rev: I

Verification:
Jun 22, 2018 - 12:26PM



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
- CENTER LINE PIPE
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- EXISTING EASEMENT
- ENTRY/EXIT BORE
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4. THE MINIMUM PIPELINE DEPTH OF COVER IS 72" IN SAND DUNE AREA.

OWNERSHIP TABLE

0112.000.00.00-EP-TX	162 EAST RANCHO GRANDE, LLC
	EL PASO NATURAL GAS CO. EASEMENT
0113.000.00.00-RD-EP-TX	DEERFIELD PARK DRIVE
	EL PASO NATURAL GAS CO. EASEMENT
0114.000.00.00-RD-EP-TX	STACY ANN LANE
	EL PASO NATURAL GAS CO. EASEMENT
0115.000.00.00-RD-EP-TX	MERIBETH LANE
	EL PASO NATURAL GAS CO. EASEMENT

PIPE SUMMARY

1 2,080' 30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
3 2,378' 30" O.D., 0.347" WT MIN, X70 MIN, ERW, 12-14MIL FBE
4 342' 30" O.D., 0.347" WT MIN, X70 MIN, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18
Rev	Revision Description	Project ID	Date

Notes:

:Reference Drawings

:Facility Name

El Paso Natural Gas Company
a Kinder Morgan company

encompass

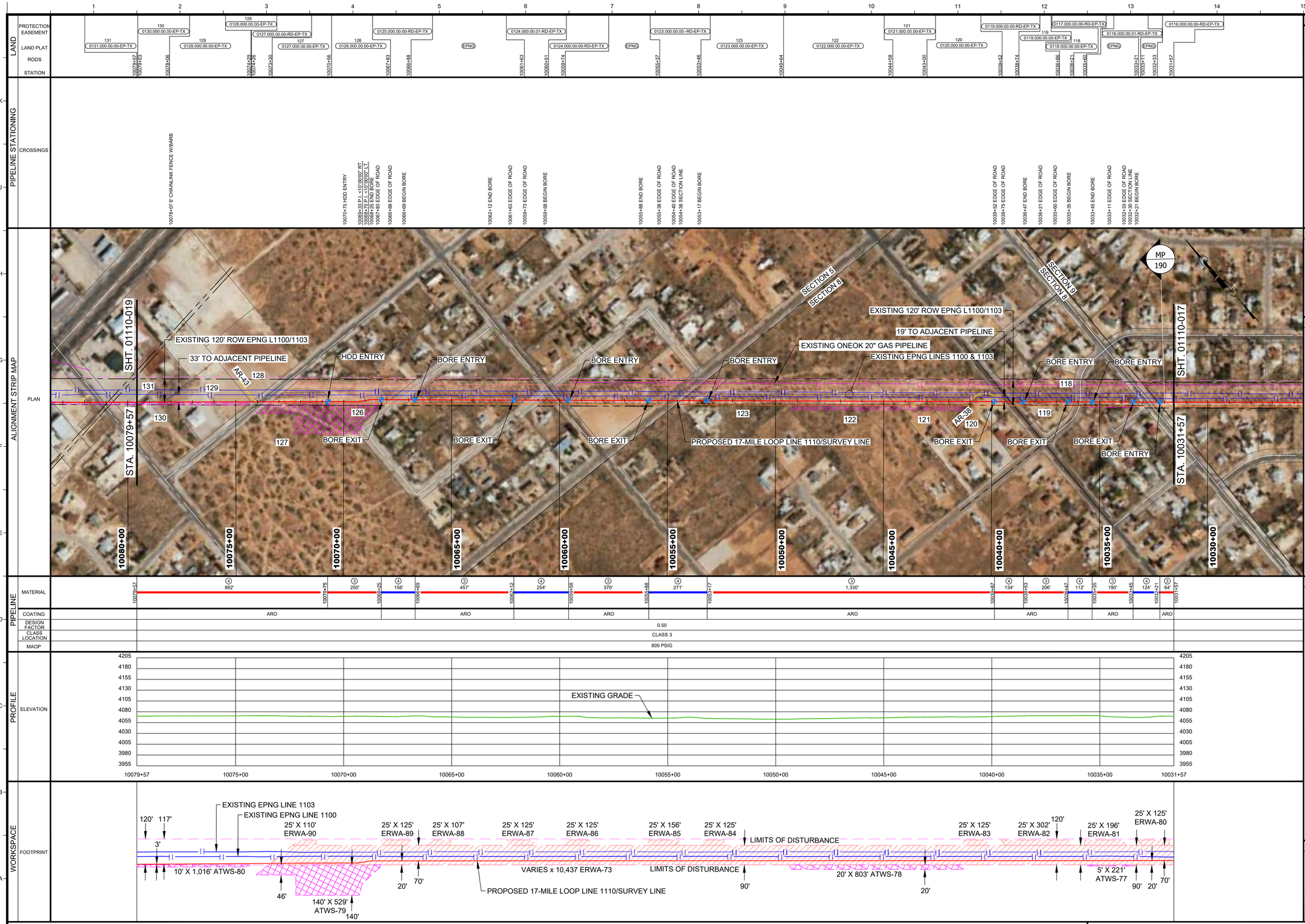
ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 92971+71 TO STA: 92923+71

Status: ISSUED FOR REVIEW

State:	TEXAS	PIN No:	61311
County:	EL PASO	Scale:	200'
Category:	ISSUED FOR REVIEW		
File Name:	61311 - ALIGNMENT SHEETS_REVI		
Drawing No:	SHT. 01110-017	Rev	I

Verification:
Jun 22, 2018 - 12:59PM



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
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- EXISTING EASEMENT
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- ADDITIONAL TEMPORARY WORKSPACE (ATWS)
- TEMPORARY WORKSPACE (TWS)
- STAGING AREA

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OWNERSHIP TABLE

EL PASO NATURAL GAS CO. EASEMENT

0116.000.00.00-RD-EP-TX	MARK JASON DRIVE
0116.000.00.01-RD-EP-TX	GLEN COVE EL PASO NATURAL GAS CO. EASEMENT
0117.000.00.00-RD-EP-TX	BUFFALO BILL DRIVE
0118.000.00.00-EP-TX	SILVIA RENTERIA
0119.000.00.00-EP-TX	JOSE N. MA. ELENA SANDATE
0119.000.00.00-RD-EP-TX	DESERT MEADOWS
0120.000.00.00-EP-TX	ISMAEL & RAMONA REYES
0121.000.00.00-EP-TX	JOSE ANGEL, ET AL
0122.000.00.00-EP-TX	CHRISTINA VARGAS
0123.000.00.00-EP-TX	JESUS & MARIA FELIX
0123.000.00.00--RD-EP-TX	MARVIN LANE EL PASO NATURAL GAS CO. EASEMENT
0124.000.00.00-RD-EP-TX	UNKNOWN
0124.000.00.01-RD-EP-TX	SHELLY LANE EL PASO NATURAL GAS CO. EASEMENT
0125.000.00.00-RD-EP-TX	JULIE LANE
0126.000.00.00-EP-TX	JOSE R & MARGARITA YBARRA
0127.000.00.00-EP-TX	KARL MAUTZ & WAYNE MAUTZ, JR.
0127.000.00.00-RD-EP-TX	VAN LANE
0128.000.00.00-EP-TX	CATHOLIC PROPERTIES/ BLESSED JUAN DIEGO PARISH
0129.000.00.00-EP-TX	CATHOLIC PROPERTIES/ BLESSED JUAN DIEGO PARISH
0130.000.00.00-EP-TX	OSWALDO PAVIA
0131.000.00.00-EP-TX	SPANISH BAPTIST CHURCH MONTANA VISTA

PIPE SUMMARY

3 2,867' 30" O.D., 0.347" WT MIN, X70 MIN, ERW, 12-14MIL FBE
4 1,933' 30" O.D., 0.347" WT MIN, X70 MIN, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

:Reference Drawings

:Facility Name

I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
G	UPDATED PER CLIENT COMMENTS	61311	04/09/18
F	REVISED FOOTPRINT	61311	03/31/18
E	REVISED EXISTING EASEMENT	61311	03/16/18
NO.	Revision Description	Project ID	Date

Notes:

El Paso Natural Gas Company
a Kinder Morgan company

encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 10031+57 TO STA: 10079+57

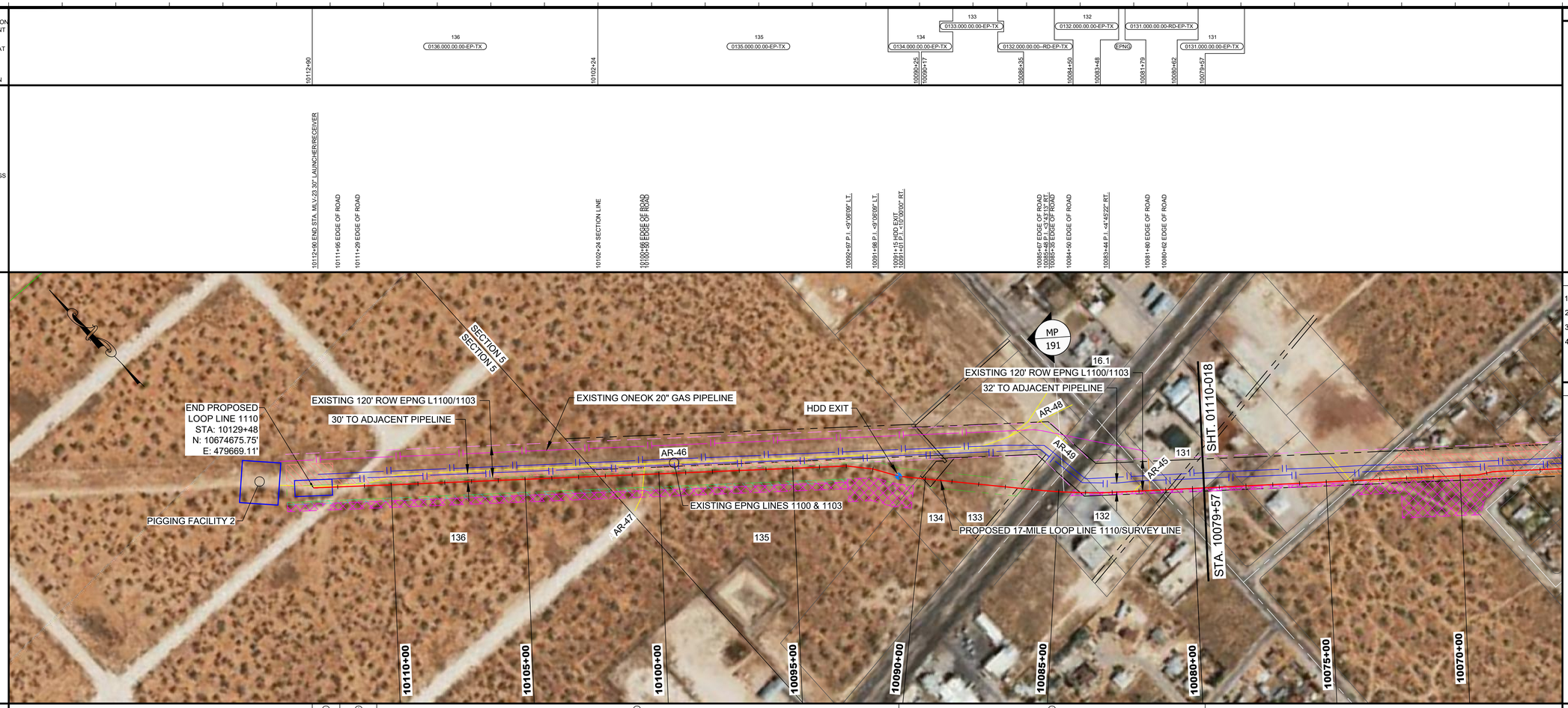
Status: ISSUED FOR REVIEW

State:	TEXAS	PIN No:	61311
County:	EL PASO	Scale:	200'
Category:	ISSUED FOR REVIEW		
File Name:	61311 - ALIGNMENT SHEETS_REVI		

Drawing No: SHT. 01110-018 Rev I

Verification:

Jun 22, 2018 - 1:29PM



LEGEND

- EDGE OF ROAD
- FOREIGN LINE
- EXISTING EPNG LINES 1100 & 1103
- FENCE
- TOP OF BANK
- TOE OF BANK
- SECTION/PROPERTY LINE
- ACCESS ROAD
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- PERMANENT EASEMENT
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- EXISTING EASEMENT
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- ADDITIONAL TEMPORARY WORKSPACE (ATWS)
- TEMPORARY WORKSPACE (TWS)
- STAGING AREA

GENERAL NOTES

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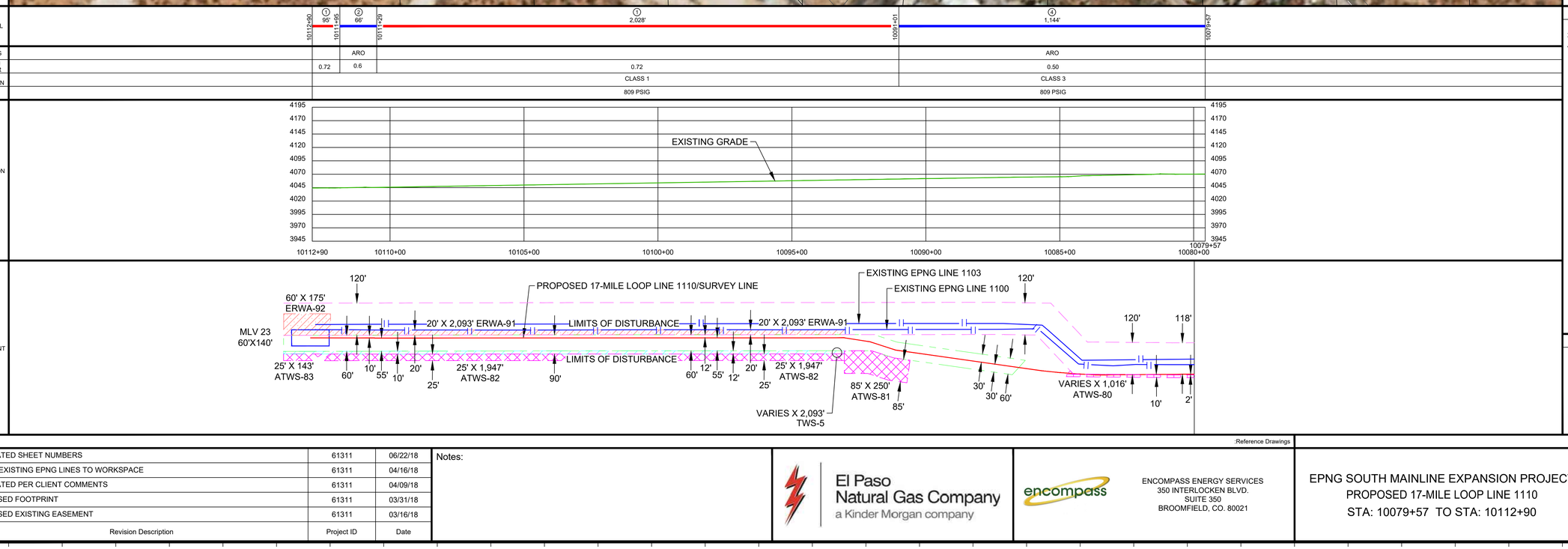
OWNERSHIP TABLE

0131.000.00.00-EP-TX	SPANISH BAPTIST CHURCH MONTANA VISTA
0131.000.00.00-RD-EP-TX	KRAG STREET EL PASO NATURAL GAS CO. EASEMENT
0132.000.00.00-EP-TX	O'REILLY AUTO ENTERPRISES, LLC
0132.000.00.00--RD-EP-TX	MONTANA AVENUE/U.S. HWY. 61-180
0133.000.00.00-EP-TX	CAR-PASO PARTNERS, L.P.
0134.000.00.00-EP-TX	CAR PASO PARTNERS, L.P.
0135.000.00.00-EP-TX	FUEL DEPOT, L.L.C.
0136.000.00.00-EP-TX	ABDOLKARIM SAADATKHAH



PIPE SUMMARY

1	2,123'	30" O.D., 0.260" WT MIN, X65 MIN, ERW, 12-14MIL FBE
2	66'	30" O.D., 0.312" WT MIN, X65 MIN, ERW, 12-14MIL FBE
4	1,144'	30" O.D., 0.347" WT MIN, X70 MIN, ERW, 12-14MIL FBE, 30-40MIL ARO

SCALE & PROJECTION

200 100 0 200 400

SCALE: 1" = 200' HORIZONTAL
1" = 100' VERTICAL

PROJECTION: NAD 83 TEXAS STATE PLANE, CENTRAL ZONE, US FOOT
AERIAL IMAGERY: 2017 MICROSOFT SURVEY: AUGUST 2017

Rev	Revision Description	Project ID	Date
I	UPDATED SHEET NUMBERS	61311	06/22/18
H	ADD EXISTING EPNG LINES TO WORKSPACE	61311	04/16/18
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Notes:

:Reference Drawings

:Facility Name

El Paso Natural Gas Company
a Kinder Morgan company

encompass

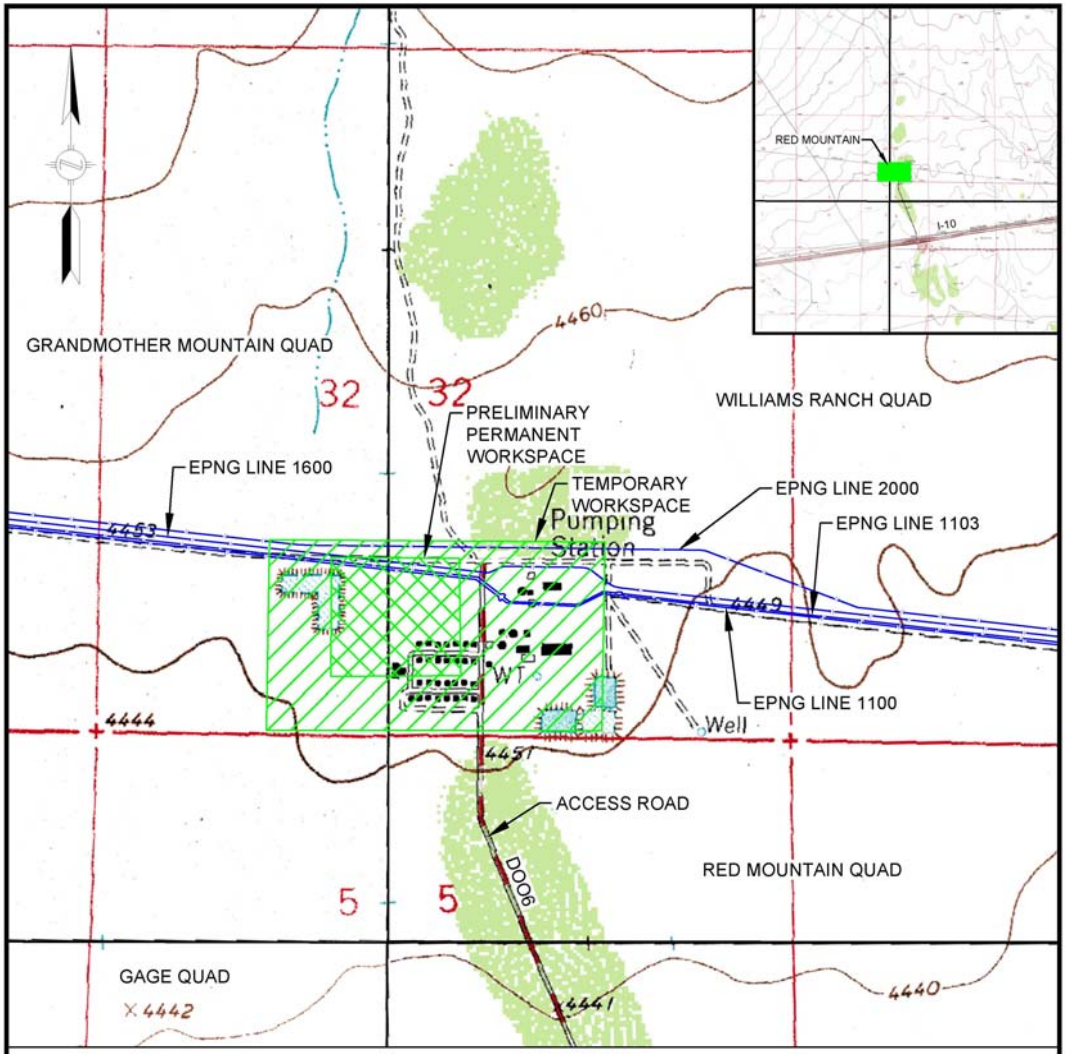
ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED 17-MILE LOOP LINE 1110
STA: 10079+57 TO STA: 10112+90

Status: ISSUED FOR REVIEW

State:	TEXAS	PIN No:	61311
County:	EL PASO	Scale:	200'
Category:	ISSUED FOR REVIEW		
File Name:	61311 - ALIGNMENT SHEETS_REVI		
Drawing No:	SHT. 01110-019	Rev	I

Verification:
Jun 22, 2018 - 12:59PM



LEGEND

- FOREIGN LINE
- APPROXIMATE PROPERTY/SITE BOUNDARY
- UNIMPROVED ROAD
- LIGHT DUTY ROAD
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY

0 1000' 2000'

C	UPDATED PER CLIENT COMMENTS	61311	06/25/18
	Revision Description	Project ID	Date

Reference Drawings

RED MOUNTAIN STATION Facility Name

KINDER MORGAN

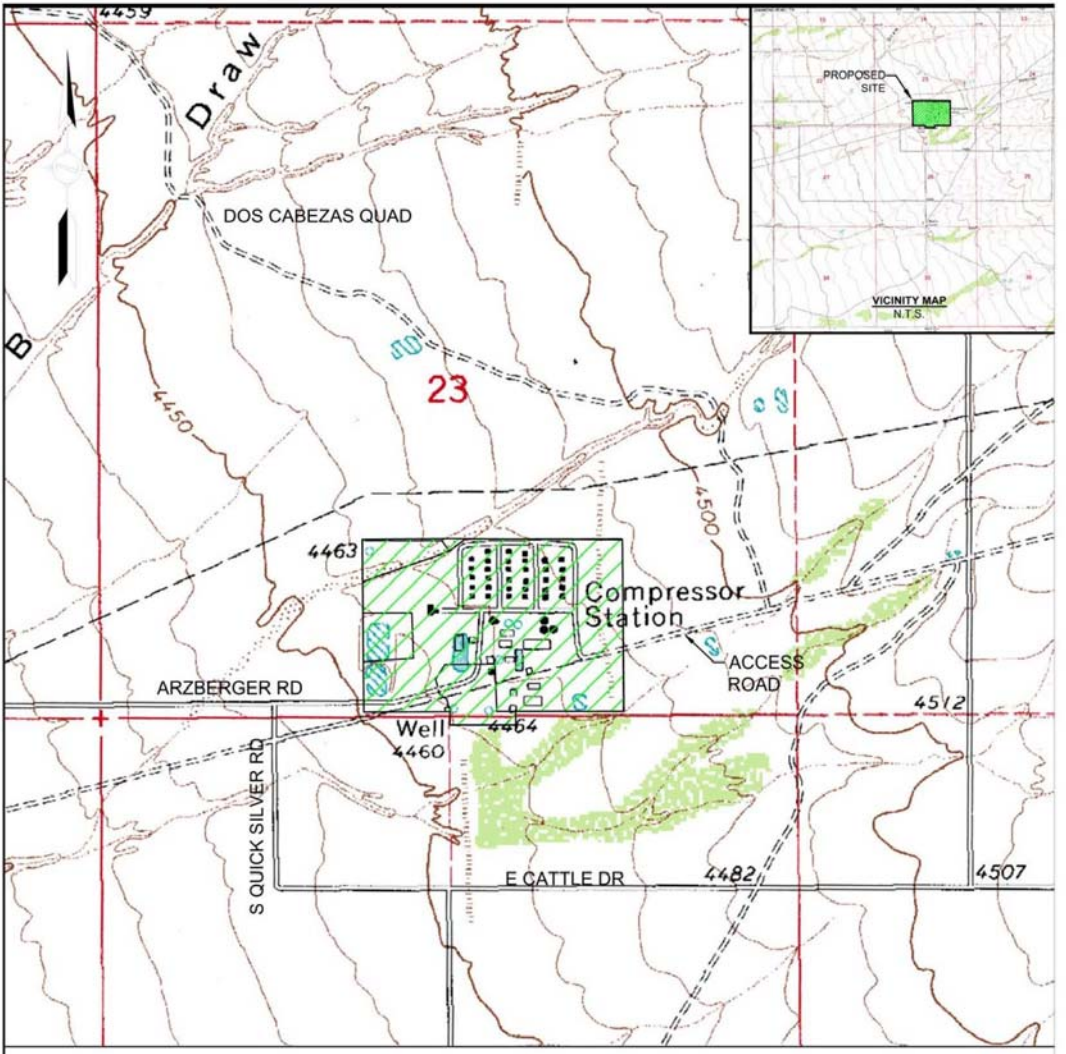
encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN PKWY
SUITE 350
BROOMFIELD, CO 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT
PROPOSED RED MOUNTAIN COMPRESSOR STATION
PROPOSED SITE
SECTION 32, TOWNSHIP 23 SOUTH
RANGE 11 WEST, 6TH P.M.

Status:

State:	NM	PIN No:	AFE 209853
County:	LUNA COUNTY	Scale:	1:1000
Category:	QUAD MAP		
File Name:	RED_MOUNTAIN_REV_E		
Drawing No:	1 OF 1	Rev	C



LEGEND

- APPROXIMATE PROPERTY/SITE BOUNDARY
- UNIMPROVED ROAD
- LIGHT DUTY ROAD
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY

0 1000' 2000'

A	ISSUED FOR REVIEW	61311	
	Revision Description	Project ID	Date

:Reference Drawings

DRAGOON COMPRESSOR STATION :Facility Name

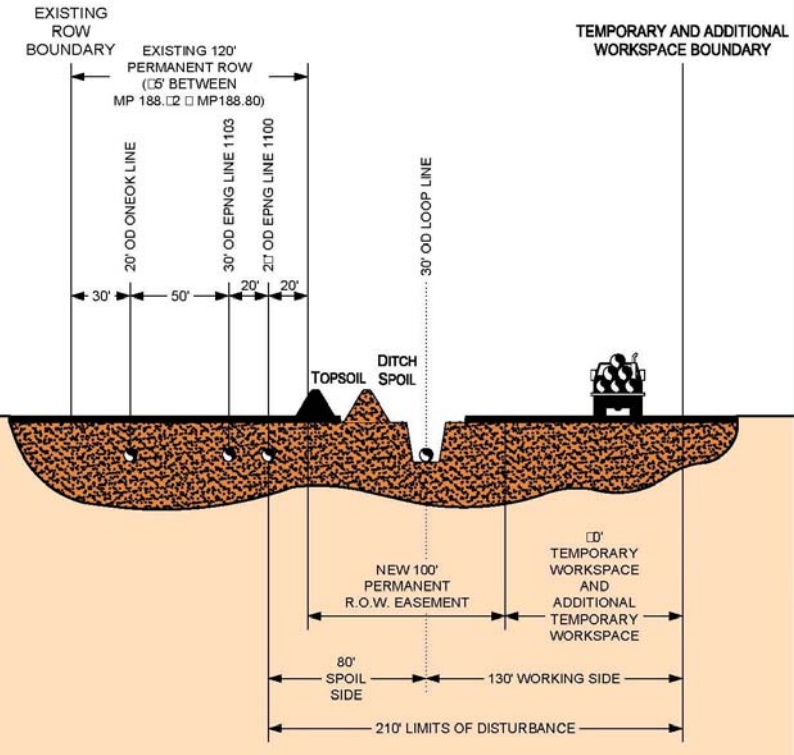
KINDER MORGAN

encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN PKWY
SUITE 350
BROOMFIELD, CO 80021

SOUTH MAINLINE EXPANSION
DRAGOON COMPRESSOR STATION
PROPOSED SITE
SECTION 23, TOWNSHIP 15 SOUTH
RANGE 26 EAST, 6TH P.M.

Status:			
State:	AZ	PIN No:	AFE 209854
County:	COCHISE	Scale:	1:1000
Category:	QUAD MAP		
File Name:	DRAGOON_SECONDARY SITE		
Drawing No:	1 OF 1	Rev	A



NOTES:

1. LIMITS OF DISTURBANCE WILL TYPICALLY BE 210' WIDE. THE PERMANENT RIGHT-OF-WAY WILL BE 100' WIDE ABUTTING THE EXISTING PERMANENT EASEMENT. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT MAJOR ROADS, RAILROADS, RIVER CROSSINGS, SIDESLOPES, WHERE FULL RIGHT-OF-WAY TOPSOIL STRIPPING IS CONDUCTED, AND OTHER SPECIAL CIRCUMSTANCES AS REQUIRED.
2. THIS DRAWING REFLECTS " TRENCH AND SPOIL SIDE" TOPSOIL STRIPPING PROCEDURE.
3. STOCKPILE TOPSOIL SEPARATELY FROM DITCH SPOIL AS SHOWN OR IN ANY CONFIGURATION APPROVED BY THE INSPECTOR.
4. THE OFFSET FROM ACTIVE PIPELINE, WHERE APPLICABLE, WILL BE 30'.

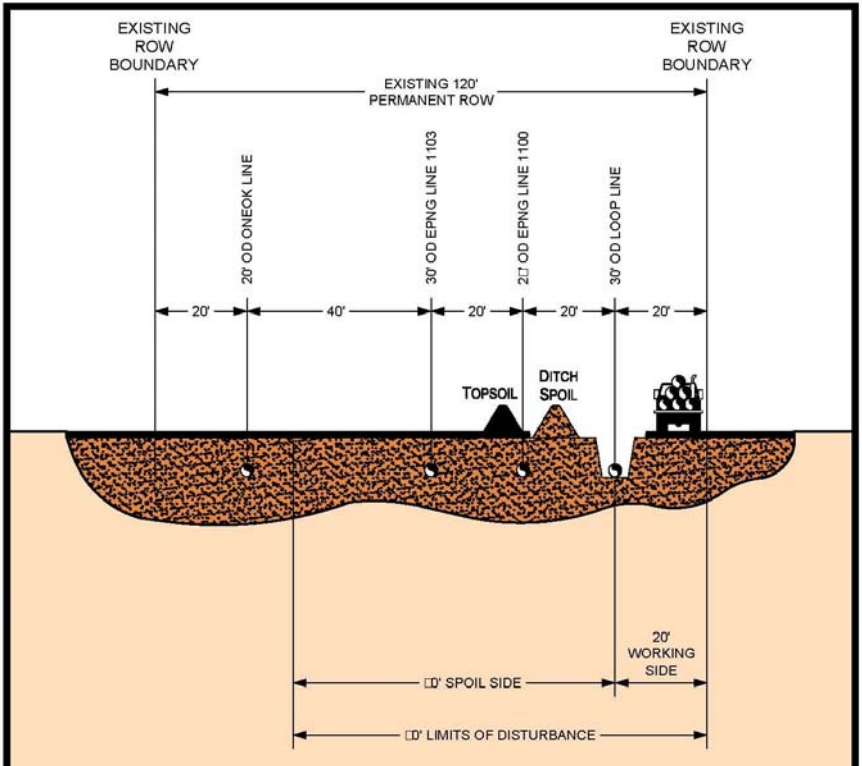
EPNG SOUTH MAINLINE EXPANSION PROJECT

CONSTRUCTION RIGHT-OF-WAY AND WORKSPACE
PRELIMINARY TYPICAL
(WITHIN SAND DUNES)
MP 188.5 - MP 189.2

Not to Scale

20□852 - S. MAINLINE EXPANSION 1□MILE LOOP

Date: 04/12/18



NOTES:

1. LIMITS OF DISTURBANCE WILL TYPICALLY BE □0' WIDE. THE PERMANENT RIGHT-OF-WAY IS WITHIN THE EXISTING PERMANENT EASEMENT. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT ROAD CROSSINGS, AND OTHER SPECIAL CIRCUMSTANCES AS REQUIRED.
2. THIS DRAWING REFLECTS " TRENCH AND SPOIL SIDE" TOPSOIL STRIPPING PROCEDURE.
3. STOCKPILE TOPSOIL SEPARATELY FROM DITCH SPOIL AS SHOWN OR IN ANY CONFIGURATION APPROVED BY THE INSPECTOR.
4. THE OFFSET FROM ACTIVE PIPELINE, WHERE APPLICABLE, WILL BE 30'.

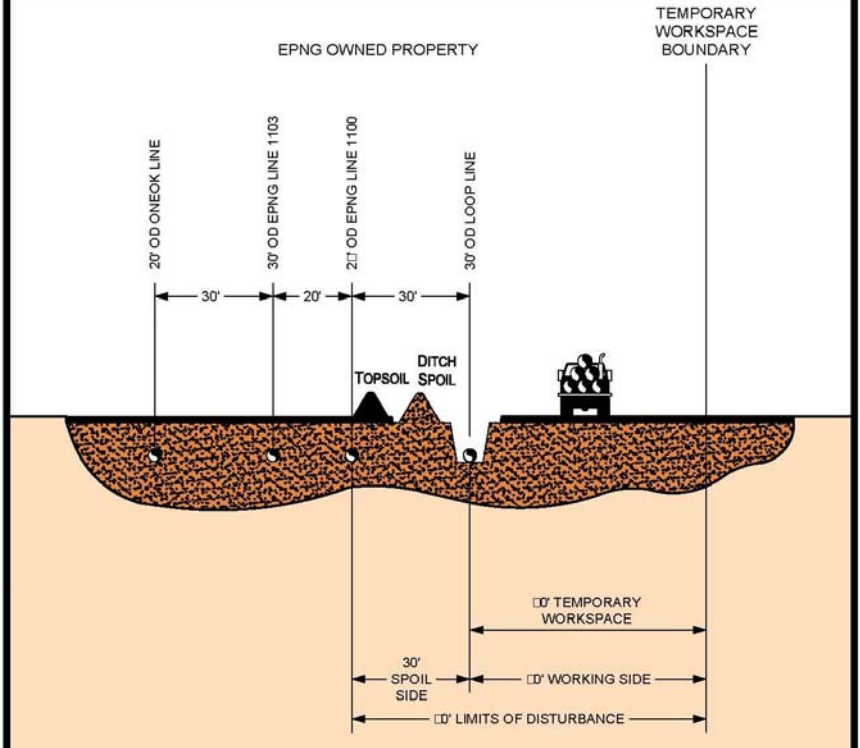
EPNG SOUTH MAINLINE EXPANSION PROJECT

CONSTRUCTION RIGHT-OF-WAY AND WORKSPACE
PRELIMINARY TYPICAL
(WITHIN HOMESTEAD MEADOWS)
MP 189.2 - MP 191.5

Not to Scale

20□52 - S. MAINLINE EXPANSION 1□MILE LOOP

Date: 04/12/18



NOTES:

1. LIMITS OF DISTURBANCE WILL TYPICALLY BE □0' WIDE. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT MAJOR ROADS, RAILROADS, RIVER CROSSINGS, SIDESLOPES, WHERE FULL RIGHT-OF-WAY TOPSOIL STRIPPING IS CONDUCTED, AND OTHER SPECIAL CIRCUMSTANCES AS REQUIRED.
2. THIS DRAWING REFLECTS " TRENCH AND SPOIL SIDE" TOPSOIL STRIPPING PROCEDURE.
3. STOCKPILE TOPSOIL SEPARATELY FROM DITCH SPOIL AS SHOWN OR IN ANY CONFIGURATION APPROVED BY THE INSPECTOR.
4. THE OFFSET FROM ACTIVE PIPELINE, WHERE APPLICABLE, WILL BE 30'.

EPNG SOUTH MAINLINE EXPANSION PROJECT

CONSTRUCTION RIGHT-OF-WAY AND WORKSPACE
PRELIMINARY TYPICAL
(NEAR HUECO C.S.)
MP 174.5 - MP 189.2

Not to Scale

20□52 - S. MAINLINE EXPANSION 1□MILE LOOP

Date: 04/12/18

Appendix B

Additional Temporary Workspaces

APPENDIX B. LOOP LINE ADDITIONAL TEMPORARY WORK SPACES, CONTRACTOR YARDS, AND LAYDOWN AREAS

Facility ID	County, State	Milepost at Midpoint	Dimensions	Reason Needed	Area (Acres)	Existing Land Use
ATWS-1	Hudspeth, TEXAS	174.61	25' X 311'	WASH AREA	0.18	Shrub/Scrub
ATWS-2	Hudspeth, TEXAS	175.11	61' X 364'	PIPELINE CROSSING/PI WORK SPACE/WASH	0.51	Shrub/Scrub
ATWS-3	Hudspeth, TEXAS	176.22	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-4	Hudspeth, TEXAS	176.26	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-5	Hudspeth, TEXAS	176.99	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-6	Hudspeth, TEXAS	177.03	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-7	Hudspeth, TEXAS	177.35	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-8	Hudspeth, TEXAS	177.38	25' X 277'	ROAD CROSSING	0.16	Barren Land (Rocks/Sand/Clay)
ATWS-9	Hudspeth, TEXAS	177.62	25' X 307'	WASH AREA	0.18	Shrub/Scrub
ATWS-10	Hudspeth, TEXAS	177.77	25' X 110'	ROAD BORE/ACCESS ROW	0.07	Barren Land (Rocks/Sand/Clay)
ATWS-11	Hudspeth, TEXAS	177.80	25' X 140'	ROAD BORE/ACCESS ROW	0.08	Barren Land (Rocks/Sand/Clay)
ATWS-12	EL PASO, TEXAS	179.80	25' X 528'	ROAD BORE/ACCESS ROW/WASH	0.29	Barren Land (Rocks/Sand/Clay)
ATWS-13	EL PASO, TEXAS	179.88	25' X 125'	ROAD CROSSING	0.07	shrub/Scrub
ATWS-14	EL PASO, TEXAS	179.99	40' X 544'	PI'S/ROAD CROSSING	0.50	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-15	EL PASO, TEXAS	180.50	25' X 402'	WASH AREAS	0.23	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-16	EL PASO, TEXAS	180.74	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-17	EL PASO, TEXAS	180.76	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-18	EL PASO, TEXAS	181.03	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-19	EL PASO, TEXAS	181.06	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-20	EL PASO, TEXAS	181.33	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-21	EL PASO, TEXAS	181.35	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub

Facility ID	County, State	Milepost at Midpoint	Dimensions	Reason Needed	Area (Acres)	Existing Land Use
ATWS-22	EL PASO, TEXAS	181.53	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-23	EL PASO, TEXAS	181.55	25' X 281'	ROAD CROSSING	0.16	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-24	EL PASO, TEXAS	181.61	25' X 309'	ROAD CROSSING	0.18	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-25	EL PASO, TEXAS	181.67	25' X 327'	ROAD CROSSING	0.19	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-26	EL PASO, TEXAS	181.74	25' X 282'	ROAD CROSSING	0.16	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-27	EL PASO, TEXAS	181.80	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-28	EL PASO, TEXAS	182.00	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-29	EL PASO, TEXAS	182.03	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-30	EL PASO, TEXAS	182.37	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-31	EL PASO, TEXAS	182.39	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-32	EL PASO, TEXAS	182.67	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-33	EL PASO, TEXAS	182.70	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-34	EL PASO, TEXAS	183.09	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-35	EL PASO, TEXAS	183.12	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-36	EL PASO, TEXAS	183.50	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-37	EL PASO, TEXAS	183.54	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-38	EL PASO, TEXAS	183.61	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub

Facility ID	County, State	Milepost at Midpoint	Dimensions	Reason Needed	Area (Acres)	Existing Land Use
ATWS-39	EL PASO, TEXAS	183.64	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-40	EL PASO, TEXAS	183.82	25' X 522'	WASH AREA	0.30	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-41	EL PASO, TEXAS	183.92	25' X 125'	ROAD CROSSING	0.08	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-42	EL PASO, TEXAS	183.95	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-43	EL PASO, TEXAS	184.23	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-44	EL PASO, TEXAS	184.26	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-45	EL PASO, TEXAS	184.34	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-46	EL PASO, TEXAS	184.37	25' X 125'	ROAD CROSSING	0.07	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
ATWS-47	EL PASO, TEXAS	184.75	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub, Grassland/Herbaceous
ATWS-48	EL PASO, TEXAS	184.78	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub, Grassland/Herbaceous
ATWS-49	EL PASO, TEXAS	184.86	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub, Grassland/Herbaceous
ATWS-50	EL PASO, TEXAS	184.88	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub, Grassland/Herbaceous
ATWS-51	EL PASO, TEXAS	185.02	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub, Grassland/Herbaceous
ATWS-52	EL PASO, TEXAS	185.05	25' X 125'	ROAD CROSSING	0.07	Grassland/Herbaceous
ATWS-53	EL PASO, TEXAS	185.24	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-54	EL PASO, TEXAS	185.27	25' X 272'	ROAD CROSSING	0.16	Shrub/Scrub, Grassland/Herbaceous
ATWS-55	EL PASO, TEXAS	185.32	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub, Grassland/Herbaceous
ATWS-56	EL PASO, TEXAS	185.49	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub, Grassland/Herbaceous
ATWS-57	EL PASO, TEXAS	185.51	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub, Grassland/Herbaceous
ATWS-58	EL PASO, TEXAS	185.79	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-59	EL PASO, TEXAS	185.92	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-60	EL PASO, TEXAS	186.02	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-61	EL PASO, TEXAS	186.04	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub

Facility ID	County, State	Milepost at Midpoint	Dimensions	Reason Needed	Area (Acres)	Existing Land Use
ATWS-62	EL PASO, TEXAS	186.29	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-63	EL PASO, TEXAS	186.31	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-64	EL PASO, TEXAS	186.38	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-65	EL PASO, TEXAS	186.40	25' X 59'	ROAD CROSSING	0.03	Shrub/Scrub
ATWS-66	EL PASO, TEXAS	186.42	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-67	EL PASO, TEXAS	186.75	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-68	EL PASO, TEXAS	186.78	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-69	EL PASO, TEXAS	186.86	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-70	EL PASO, TEXAS	186.88	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-71	EL PASO, TEXAS	187.06	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-72	EL PASO, TEXAS	187.09	25' X 125'	ROAD CROSSING	0.07	Shrub/Scrub
ATWS-73	EL PASO, TEXAS	187.32	25' X 236	PIPELINE CROSSINGS	0.14	Shrub/Scrub, Grassland/Herbaceous
ATWS-74	EL PASO, TEXAS	188.06	25' X 125'	ROAD BORE/ACCESS ROW	0.07	Shrub/Scrub
ATWS-75	EL PASO, TEXAS	188.57	134' X 3,630'	EXTRA SPACE FOR SAND DUNE AREA	7.22	Shrub/Scrub
ATWS-76	EL PASO, TEXAS	189.49	20' X 115'	ROAD BORE/ACCESS ROW	0.05	Shrub/Scrub
ATWS-77	EL PASO, TEXAS	190.02	5' X 221'	TEMPORARY WORKSPACE/SPOIL DIRT	0.03	Shrub/Scrub
ATWS-78	EL PASO, TEXAS	190.25	20' X 803'	TEMPORARY WORKSPACE/SPOIL DIRT	0.38	Developed (Low Intensity), Developed (Open Space), Shrub/Scrub
ATWS-79	EL PASO, TEXAS	190.73	140' X 529'	ROAD BORE/ACCESS ROW	1.24	Developed (Open Space), Shrub/Scrub
ATWS-80	EL PASO, TEXAS	190.89	10' X 1016'	ROAD BORE/ACCESS ROW	0.24	Shrub/Scrub
ATWS-81	EL PASO, TEXAS	191.11	85' X 250'	HDD BORE PIT AREA	0.48	Shrub/Scrub, Grassland/Herbaceous
ATWS-82	EL PASO, TEXAS	191.32	25' X 1947'	HDD PULL BACK	1.10	Barren Land (Rocks/Sand/Clay), Shrub/Scrub, Grassland/Herbaceous
ATWS-83	EL PASO, TEXAS	191.52	25' X 143'	ROAD CROSSING/ACCESS ROW	0.08	Barren Land (Rocks/Sand/Clay), Shrub/Scrub
Contractor/Pipe Yard 1	El Paso, TX	N/A	344' x 520'	Pipe Storage Area	4.10	Developed (Open Space), Developed (Low Intensity), Barren Land (Rock/Sand/Clay), Shrub/Scrub, Grassland/Herbaceous
Contractor/Pipe Yard 2	El Paso, TX	N/A	345' x 644'	Pipe Storage Area	5.16	Shrub/Scrub

Facility ID	County, State	Milepost at Midpoint	Dimensions	Reason Needed	Area (Acres)	Existing Land Use
Contractor/Pipe Yard 3	El Paso, TX	N/A	317' x 693'	Pipe Storage Area	5.05	Shrub/Scrub, Grassland/Herbaceous
Contractor Yard/Pipe 4	El Paso, TX	N/A	315' x 639'	Pipe Storage Area	5.00	Shrub/Scrub, Grassland/Herbaceous

Appendix C

Endangered Species

Appendix C. Federally Listed Species Potentially Occurring in El Paso and Hudspeth Counties, Texas; Luna County, New Mexico; and Cochise County, Arizona

Common Name (*Species Name*)	**Federal Status***	**Project Area**	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area(s)**	**Determination of Effect**
Plants					
Canelo Hills ladies' tresses (*Spiranthes delitescens*)	E	Dragoon	This species of the orchid family is found at elevations between 4,585 and 4,970 feet above mean sea level (amsl) in cienega wetlands, usually intermixed with tall grasses and sedges, on fine-grained, highly organic, saturated soils. Only known from four cienegas in southern Arizona.	Unlikely to occur. The Dragoon project areas are below the known elevational range for this species. In addition, there are no cienegas in the project areas.	No effect.
Cochise pincushion cactus (*Coryphantha robbinsiorum*)	T	Dragoon	Found rooted in bedrock cracks or thin soil in rolling hills of gray limestone in the transition zone between the Chihuahuan Desertscrub and Semidesert Grassland biomes at elevations between 4,200 and 4,650 feet amsl. Only known from the extreme southeastern part of Cochise County.	Unlikely to occur. The Dragoon project area does not contain rolling hills of limestone. Additionally, the project area is more than 40 miles northwest of the known location of this species.	No effect.
Guadalupe fescue (*Festuca ligulata*)	E	Loop Line	This perennial grass occurs in a few disjunct sky island habitats west of the Pecos River in Texas and in the state of Coahuila, Mexico, above 5,905 feet amsl in coniferous oak woodlands.	Unlikely to occur. The Loop Line is below the elevational range of this species and does not contain suitable coniferous oak woodlands.	No effect.
Sneed pincushion cactus (*Coryphantha sneedii* var. *sneedii*)	E	Loop Line	This cactus occurs on exposed areas of steep, sloping limestone in Chihuahuan Desert in Doña Ana County, New Mexico, and El Paso County, Texas.	Unlikely to occur. While the Loop Line project area is within the known range of this species, a species-specific survey was conducted by experienced biologists and none were identified. In addition, the nearest known population of this species is more than 15 miles west of the project area.	No effect.
Wright's marsh thistle (*Cirsium wrightii*)	C	Dragoon	A perennial species that is confined to wetlands and occupies alkaline spring seeps and cienegas at 3,800 to 6,000 feet amsl. In Arizona, only occurs in the San Bernardino NWR.	Unlikely to occur. The project areas are more than 50 miles northwest of the San Bernardino NWR and do not contain wetlands or spring seeps.	No impact.

Common Name (*Species Name*)	**Federal Status***	**Project Area**	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area(s)**	**Determination of Effect**
Huachuca water umbel (*Lilaeopsis schaffneriana* ssp. *recurva*)	E	Dragoon	Semi-aquatic to aquatic perennial found in shallow water or saturated soil of cienegas or marshy wetlands at elevations between 4,000 and 6,500 feet amsl. Known from the Huachuca Mountains, Canelo Hills, headwaters of the Santa Cruz River to Black Draw, and San Pedro River.	Unlikely to occur. The project area does not contain the cienega wetlands or saturated soils.	No effect.
Fish					
Desert pupfish (*Cyprinodon macularius*)	E	Dragoon	Found in shallow waters of desert springs, small streams, and marshes at elevations below 5,000 feet amsl. One natural population still occurs in Quitobaquito Spring and Quitobaquito Pond (Pima County), and reintroductions have been made in Cochise, Pima, Pinal, Maricopa, Graham, Cochise, La Paz, and Yavapai Counties.	Unlikely to occur. The project area does not contain aquatic habitats.	No effect.
Beautiful shiner (*Cyprinella formosa*)	T	Dragoon, Red Mountain	This species occurs mainly in pools in small to medium-sized streams with sand, gravel, and rock substrates at elevations below 4,500 amsl. Known only from the San Bernardino National Wildlife Refuge.	Unlikely to occur. The Dragoon and Red Mountain project areas are more than 50 miles north of the San Bernardino National Wildlife Refuge. In addition, there are no aquatic habitats in the project areas.	No effect.
Gila chub (*Gila intermedia*)	E	Dragoon	Normally found in smaller headwater streams, cienegas, and springs or marshes of the Gila River Basin at elevations between 2,720 and 5,420 feet amsl.	Unlikely to occur. The Project area does not contain the headwater streams with deep pools typically inhabited by this species.	No effect.
Gila topminnow (*Poeciliopsis occidentalis*)—includes Gila and Yaqui subspecies	E	Dragoon	Occurs in small streams, springs, and cienegas at elevations below 4,500 feet amsl, primarily in shallow areas with aquatic vegetation and debris for cover. In Arizona, most of the remaining native populations are in the	Unlikely to occur. The project area does not contain aquatic habitats.	No effect.

Common Name (*Species Name*)	Federal Status*	Project Area	Range or Habitat Requirements	Potential for Occurrence in Project Area(s)	Determination of Effect
			Santa Cruz River system.		
Loach minnow (*Tiaroga cobitis*)	E	Dragoon	Found in small to large perennial creeks and rivers, typically in shallow, turbulent riffles with cobble substrate, swift currents, and filamentous algae at elevations below 8,000 feet amsl. Its range in Arizona is limited to reaches in the East Fork of the White River (Navajo County); Aravaipa, Deer, and Turkey Creeks (Graham and Pinal Counties); San Francisco and Blue Rivers; and Eagle, Campbell Blue, and Little Blue Creeks (Greenlee County). A population was discovered in the Black River in 1996.	Unlikely to occur. The project area does not contain rivers or creeks with swift currents and turbulent riffles.	No effect.
Rio Grande silvery minnow (*Hybognathus amarus*)	NEP	Loop Line	Historically, this fish was widespread in the Rio Grande Basin, though its current range is restricted to four reaches of the Rio Grande in New Mexico and an experimental population introduced into the Rio Grande near Big Bend, Texas. This fish typically uses areas where water flows at low or moderate velocities where it is often associated with shoreline, debris, eddies, or submerged vegetation.	Unlikely to occur. The project area is distant from the known populations of this species and does not contain suitable riverine habitat.	No effect.
Spikedace (*Meda fulgida*)	E	Dragoon	Found in medium-sized to large perennial streams, where it inhabits moderate-velocity to fast waters over gravel and rubble substrates, typically at elevations below 6,000 feet amsl. In Arizona, populations are found in the middle Gila, lower San Pedro, and Verde Rivers and Aravaipa and Eagle Creeks.	Unlikely to occur. This species does not have a known population distribution in Cochise County. In addition, there are no aquatic habitats in the project areas.	No effect.
Yaqui catfish (*Ictalurus pricei*)	T	Dragoon	Primarily found at elevations between 4,000 and 5,000 feet amsl in larger rivers, but also occurs in quiet, clear pools in small streams. In Arizona, its range is limited to the portion of the Rio Yaqui Basin that is within the San Bernardino NWR.	Unlikely to occur. The project areas are more than 50 miles northwest of the San Bernardino NWR and do not contain perennial	No effect.

Common Name (*Species Name*)	Federal Status*	Project Area	Range or Habitat Requirements	Potential for Occurrence in Project Area(s)	Determination of Effect
				streams or other aquatic habitat.	
Yaqui chub (*Gila purpurea*)	E	Dragoon	Found at elevations between 4,000 and 6,000 feet amsl in deeper pools of small streams near undercut banks or debris, often in association with dense aquatic vegetation. In Arizona, its range is limited to the portion of the Rio Yaqui Basin that is within the San Bernardino and Leslie Canyon NWRs.	Unlikely to occur. The project areas are more than 50 miles northwest of the San Bernardino NWR and do not contain small streams or other aquatic habitats.	No effect.
Invertebrates					
San Bernardino springsnail (*Pyrgulopsis bernardina*)	T	Dragoon	Found in springs with firm substrate composed of cobble, gravel, woody debris, and aquatic vegetation. This species is only known from a single population (Snail Spring on Slaughter Ranch) within springs and seeps on the San Bernardino NWR at an elevation of 3,860 feet amsl.	Unlikely to occur. The project area is more than 50 miles northwest of the San Bernardino NWR and does not contain springs or the appropriate substrate to support this species.	No effect.
Amphibians					
Sonora tiger salamander (*Ambystoma tigrinum stebbinsi*)	E	Dragoon	Breeds in stock tanks at about 50 sites near Lochiel, Arizona at elevations between 4,000 and 6,300 feet amsl. All sites are within the headwaters of the Santa Cruz and San Pedro Rivers and include San Rafael Valley and the foothills of the Patagonia and Huachuca Mountains (Santa Cruz and Cochise Counties, Arizona, and Sonora, Mexico).	Unlikely to occur. The Project site is approximately 19 miles from Lochiel, Arizona. While the site contains a concrete-lined stormwater basin, there are no stock tanks in the project area.	No effect.
Chiricahua leopard frog (*Rana chiricahuensis*)	T	Dragoon, Red Mountain	Restricted to springs, livestock tanks, and streams in the upper portions of watersheds at elevations between 3,281 and 8,890 feet amsl in central, east-central, and southeastern Arizona. Populations in central and east-central Arizona are distinct from those in southeastern Arizona and may be distinct species.	Unlikely to occur. Although the project areas are within the elevational range of this species, the project areas do not contain aquatic habitats.	No effect.
Reptiles					
Northern Mexican gartersnake	T	Dragoon	This species is most abundant at elevations between 3,000 and 5,000	Unlikely to occur. There are no permanent aquatic	No effect.

Common Name (*Species Name*)	Federal Status*	Project Area	Range or Habitat Requirements	Potential for Occurrence in Project Area(s)	Determination of Effect
(*Thamnophis eques megalops*)			feet amsl in densely vegetated habitat surrounding cienegas, streams, and stock tanks, in or near water along streams in valley floors and generally open areas but not in steep mountain canyon stream habitat (Rosen and Schwalbe 1988). Considered extant in fragmented populations within the middle to upper Verde River drainage, middle to lower Tonto Creek, Cienega Creek, and a small number of isolated wetland habitats elsewhere in southeastern Arizona.	or semi-aquatic habitats in the project areas.	
New Mexico ridge-nosed rattlesnake (*Crotalus willardi obscurus*)	T	Dragoon	Found among rocks, bunchgrass, and leaf litter in steep, rocky canyons in the pine-oak and pine-fir belts at elevations between 5,600 and 9,000 feet amsl. In Arizona, only known from the Peloncillo Mountains.	Unlikely to occur. The project area does not contain habitat similar to those used by the species and are below the known elevational range of the species. Further, the Dragoon project area is at least 40 miles northwest of the only known population of this species.	No effect.
Mammals					
Ocelot (*Leopardus* [*Felis*] *pardalis*)	E	Dragoon	In Arizona, this species has typically been observed in subtropical thorn forest, thornscrub, and dense, brushy thickets at elevations below 8,000 feet amsl and is often found in riparian bottomlands. The critical habitat component is probably dense cover near the ground and complete avoidance of open country. In Arizona, there are two recent confirmed sightings of ocelot in the Huachuca Mountains (2011), one near Globe (2010), and unconfirmed sightings in the Chiricahua and Peloncillo Mountains.	Unlikely to occur. This species is extremely rare, and the compressor station project area lacks the subtropical thorn forest, thornscrub, and dense, brushy thickets preferred by this species.	No effect.
Jaguar (*Panthera onca*)	E	Dragoon	Jaguars were once prominent in southern Arizona and were found in Sonoran desertscrub up through subalpine conifer forest at elevations	Unlikely to occur. Although the project area falls within the range and habitat for this	No effect.

Common Name (*Species Name*)	Federal Status*	Project Area	Range or Habitat Requirements	Potential for Occurrence in Project Area(s)	Determination of Effect
			between 1,600 and 9,000 feet. Based on 25 historical (from 1902 to 2001) reliable and spatially accurate jaguar sighting records in Arizona, the majority of jaguars were observed in scrub grasslands (56%) and Madrean evergreen forests (20%), all were within 6.2 miles of a water source, and most occurred in moderately rugged to extremely rugged terrain (Hatten et al. 2005). Additionally, river valleys, and other drainage features, likely "provide travel corridors for jaguars, along with higher prey densities, cooler air, and denser vegetation than surrounding habitats" (Jaguar Recovery Team and FWS 2012:13).	species, and one individual was observed in the Dos Cabezas Mountains, approximately 5 miles northeast of the project area, this species is unlikely to occur because 1) jaguars are extremely rare, with only three individuals known to currently inhabit the United States; 2) the disturbed project areas do not provide rugged habitat for this species; 3) the project areas are close to agriculture, roads, and other human disturbances; and 4) there is no designated critical habitat within 3 miles of the project areas.	
Lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*)	E	Dragoon	Found in southern Arizona from the Picacho Mountains southwesterly to the Agua Dulce Mountains and southeasterly to the Galiuro and Chiricahua Mountains at elevations between 1,600 and 11,500 feet amsl. Roosts in caves, abandoned mines, and unoccupied buildings at the base of mountains where agave, saguaro, and organ pipe cacti (*Stenocereus thurberi*) are present. Forages at night on nectar, pollen, and fruit of paniculate agaves and columnar cacti. The foraging radius may be 30 to 60 miles per night or more.	Unlikely to occur. The project area does not contain roost sites or potential forage plants (i.e., agaves or saguaro) for this species.	No effect.
Birds					
Least tern (*Sterna antillarum*)	E	Loop Line	Migratory species occurring in North America during the breeding season, when it is associated with water (e.g., lakes, reservoirs, rivers). The interior least tern breeds along inland river systems in the United	Unlikely to occur. The project areas contain no lakes, reservoirs, or rivers for this species.	No effect.

Common Name (*Species Name*)	**Federal Status***	**Project Area**	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area(s)**	**Determination of Effect**
			States. In Texas, breeding is restricted to the Pecos River Basin. Nests in small colonies, and nests are shallow depressions scraped in open sandy areas, gravelly patches, or exposed flats.		
Mexican spotted owl (*Strix occidentalis lucida*)	T	Dragoon, Loop Line	Found in mature montane forests and woodlands and steep, shady, wooded canyons. Can also be found in mixed- conifer and pine-oak vegetation types. Generally nests in older forests of mixed conifers or ponderosa pine– Gambel oak (*Quercus gambelii*). Nests in live trees on natural platforms (e.g., dwarf mistletoe [*Arceuthobium* spp.] brooms), snags, and canyon walls at elevations between 4,100 and 9,000 feet amsl.	Unlikely to occur. There are no mature montane forests; steep, shady wooded canyons; or appropriate vegetation types within the project areas.	No effect.
Northern Aplomado falcon (*Falco femoralis septentrionalis*)	E/NEP	Dragoon, Loop Line, Red Mountain	Formerly (prior to 1890) found in open grasslands of southeastern Arizona (Cochise and Santa Cruz Counties). The last records were from the Sulphur Springs Valley (1939) and near Saint David (1940). These birds prefer open grasslands with scattered trees, in areas with low ground cover at elevations of 3,500 to 9,000 feet amsl. They particularly use yuccas and mesquite as nesting platforms. Although frequently reported since then, no Arizona sightings have been confirmed. The first successful U.S. nesting of wild aplomado falcons in more than 50 years occurred recently in New Mexico.	Unlikely to occur. Though the boundary of the 10J reintroduction area includes all of New Mexico and Arizona, and portions of Texas include this species' natural range, the project areas do not contain the open grassland habitat preferred by this species. This species has not been observed in the vicinity of any of the project areas (AZHGIS, 2017; eBird, 2017; TXNDD, 2017).	No effect
Piping plover (*Charadrius melodus*)	T	Loop Line	In Texas, inhabits the coastline where they feed and nest. Associated with water at all times of year: occurs on sand flats or along bare shorelines of rivers, lakes, or coastlines.	Unlikely to occur. The project area is approximately 600 miles from the coast does not contain coastline habitat for this species.	No effect.
Red knot (*Calidris canutus rufa*)	T	Loop Line	In Texas, known to winter along coastlines. This species eats small clams, mussels, snails, and other invertebrates.	Unlikely to occur. The project area does not contain coastline habitat for this species.	No effect.

Common Name (*Species Name*)	**Federal Status***	**Project Area**	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area(s)**	**Determination of Effect**
Southwestern willow flycatcher (*Empidonax traillii extimus*)	E	Dragoon, Loop Line	Found in dense riparian habitats along streams, rivers, and other wetlands where cottonwood (*Populus* spp.), willow (*Salix* spp.), boxelder (*Acer negundo*), saltcedar (*Tamarix* spp.), Russian olive (*Elaeagnus angustifolia*), buttonbush (*Cephalanthus* spp.), and arrowweed (*Pluchea sericea*) are present. Nests are found in thickets of trees and shrubs, primarily those that are 13 to 23 feet tall, among dense, homogeneous foliage. Habitat occurs at elevations below 8,500 feet amsl.	Unlikely to occur. There are no dense riparian habitats along streams, rivers, or other wetlands in the project areas.	No effect.
Yellow-billed cuckoo (*Coccyzus americanus*)	T	Dragoon, Loop Line, Red Mountain	Typically found in riparian woodland vegetation (cottonwood, willow, or saltcedar) at elevations below 6,600 feet amsl. Dense understory foliage appears to be an important factor in nest site selection. The highest concentrations in Arizona are along the Agua Fria, San Pedro, upper Santa Cruz, and Verde River drainages and Cienega and Sonoita Creeks.	Unlikely to occur. There are no riparian woodland habitats in the project areas.	No effect.

*FWS Status Definitions

E = Endangered. Endangered species are those in imminent jeopardy of extinction. The ESA specifically prohibits the take of a species listed as endangered. Take is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

T = Threatened. Threatened species are those in imminent jeopardy of becoming endangered. The ESA prohibits the take of a species listed as threatened under Section 4d of the ESA. Take is defined as to harass, harm, pursue, hunt, wound, kill, trap, capture, or collect, or to engage in any such conduct.

C = Candidate. Candidate species are those for which FWS has sufficient information on biological vulnerability and threats to support proposals to list as endangered or threatened under the ESA. However, proposed rules have not yet been issued because such actions are precluded at present by other listing activity.

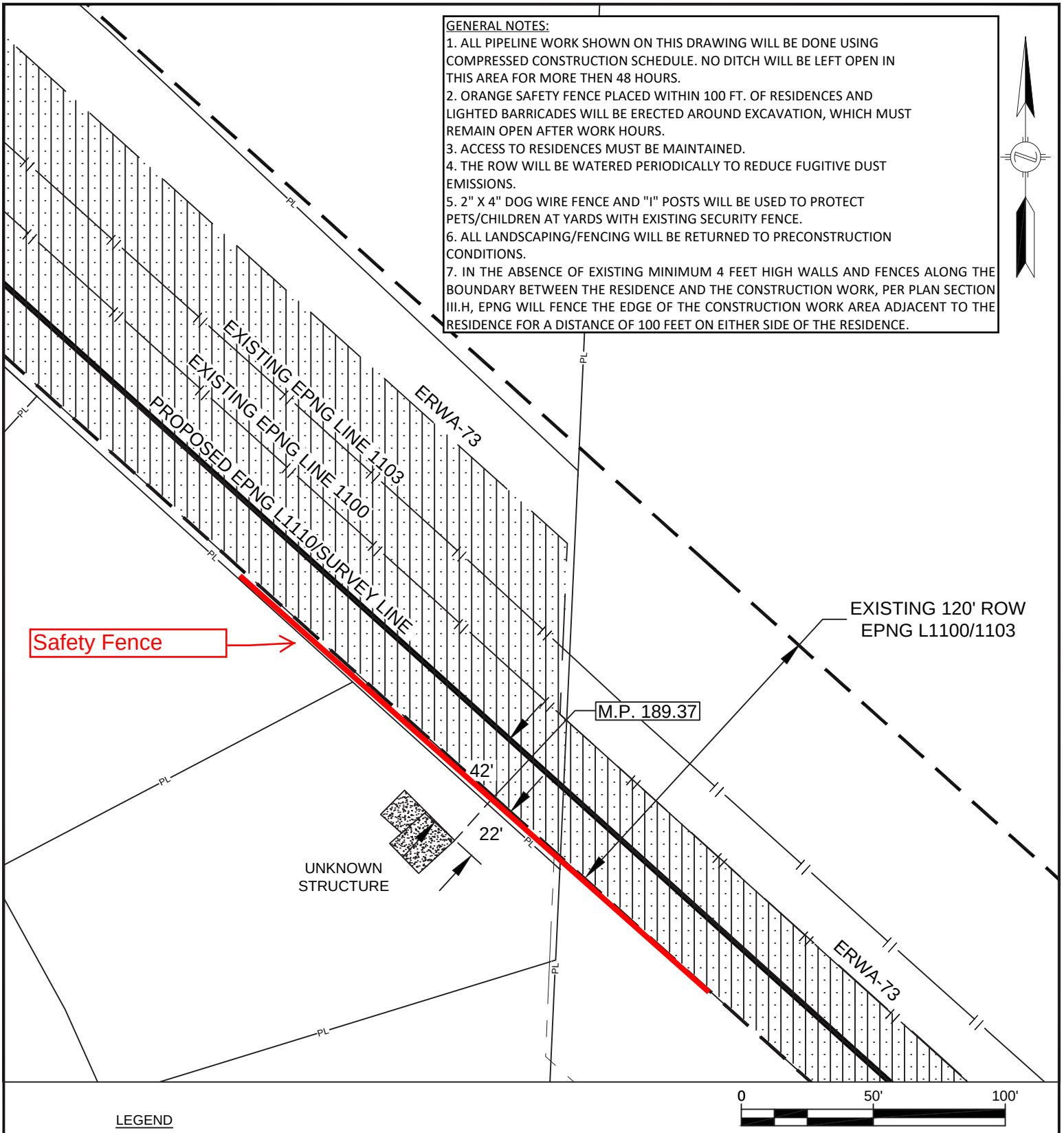
NEP = Non-Essential Experimental Population. Experimental populations of a species designated under Section 10(j) of the ESA for which the FWS, through the best available information, believes is not essential for the continued existence of the species. Regulatory restrictions are considerably reduced under an NEP designation.

Appendix D

Residential and Other Structures Drawings

GENERAL NOTES:

1. ALL PIPELINE WORK SHOWN ON THIS DRAWING WILL BE DONE USING COMPRESSED CONSTRUCTION SCHEDULE. NO DITCH WILL BE LEFT OPEN IN THIS AREA FOR MORE THEN 48 HOURS.
2. ORANGE SAFETY FENCE PLACED WITHIN 100 FT. OF RESIDENCES AND LIGHTED BARRICADES WILL BE ERECTED AROUND EXCAVATION, WHICH MUST REMAIN OPEN AFTER WORK HOURS.
3. ACCESS TO RESIDENCES MUST BE MAINTAINED.
4. THE ROW WILL BE WATERED PERIODICALLY TO REDUCE FUGITIVE DUST EMISSIONS.
5. 2" X 4" DOG WIRE FENCE AND "I" POSTS WILL BE USED TO PROTECT PETS/CHILDREN AT YARDS WITH EXISTING SECURITY FENCE.
6. ALL LANDSCAPING/FENCING WILL BE RETURNED TO PRECONSTRUCTION CONDITIONS.
7. IN THE ABSENCE OF EXISTING MINIMUM 4 FEET HIGH WALLS AND FENCES ALONG THE BOUNDARY BETWEEN THE RESIDENCE AND THE CONSTRUCTION WORK, PER PLAN SECTION III.H, EPNG WILL FENCE THE EDGE OF THE CONSTRUCTION WORK AREA ADJACENT TO THE RESIDENCE FOR A DISTANCE OF 100 FEET ON EITHER SIDE OF THE RESIDENCE.



LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

C	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

KINDER MORGAN

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ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 189.37

Status:			
State:	TX	PIN No:	
County:	EL PASO	Scale:	1"=50'
Category:			
File Name:	61311-RES-REVH		
Drawing No:	1 OF 16	Rev	C

GENERAL NOTES:

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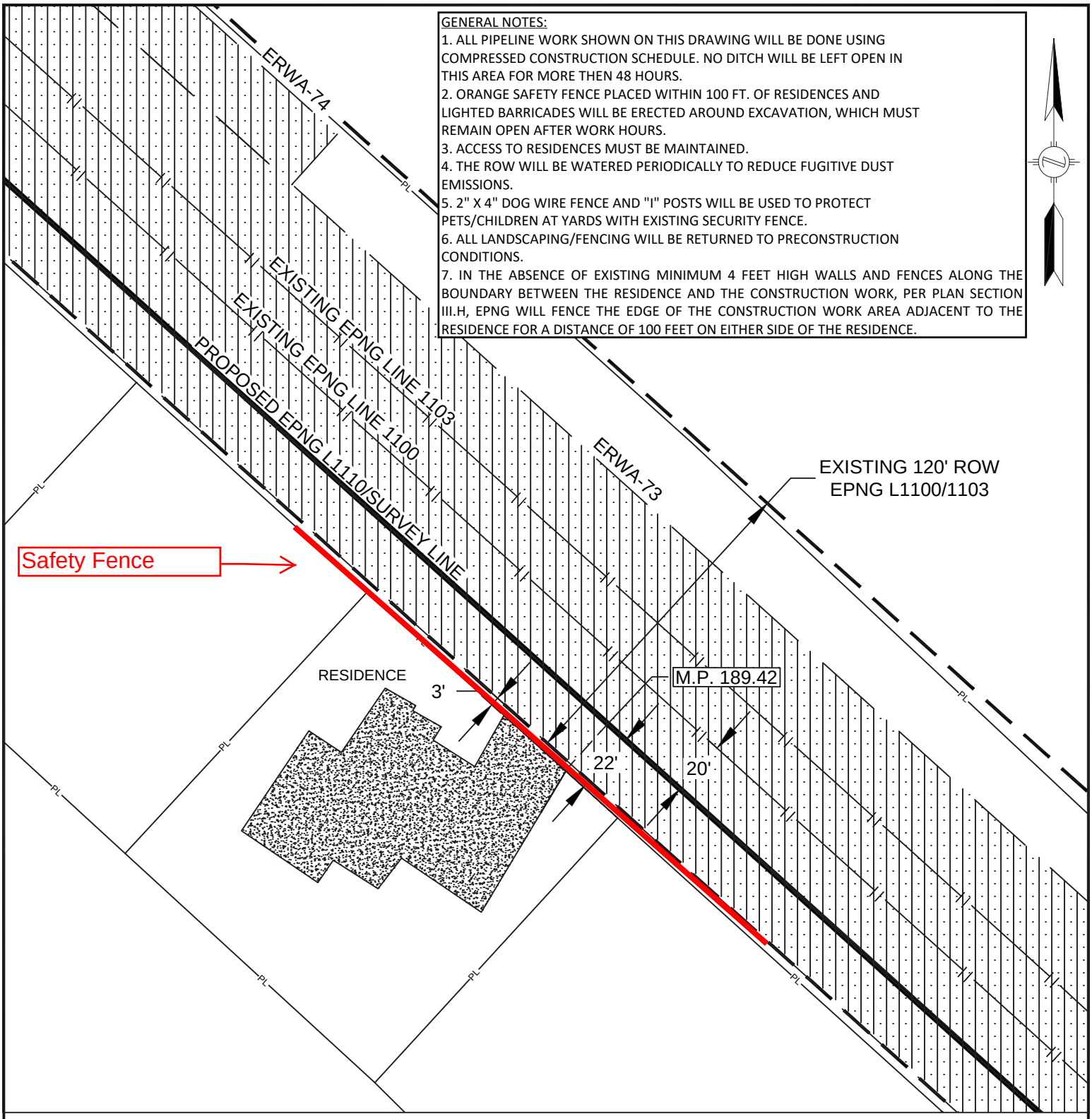

LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

H	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

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EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 189.42

Status:			
State:	TX	PIN No:	
County:	EL PASO	Scale:	1"=50'
Category:			
File Name:	61311-RES-REVH		
Drawing No:	2 OF 16	Rev	H

GENERAL NOTES:
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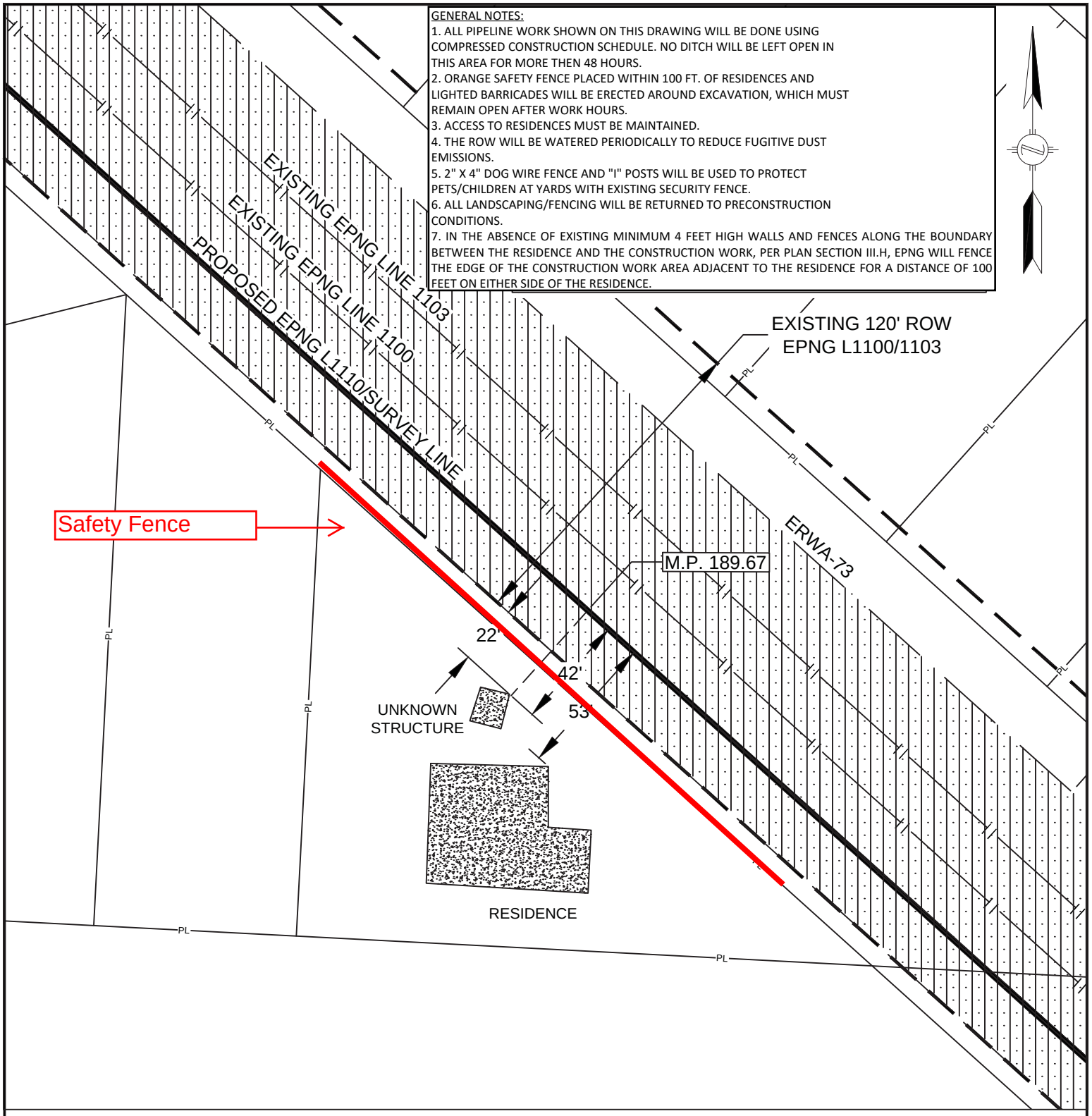

LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

H	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO	Revision Description	Project ID	Date
			:Reference Drawings
			:Facility Name

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EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 189.67

Status:			
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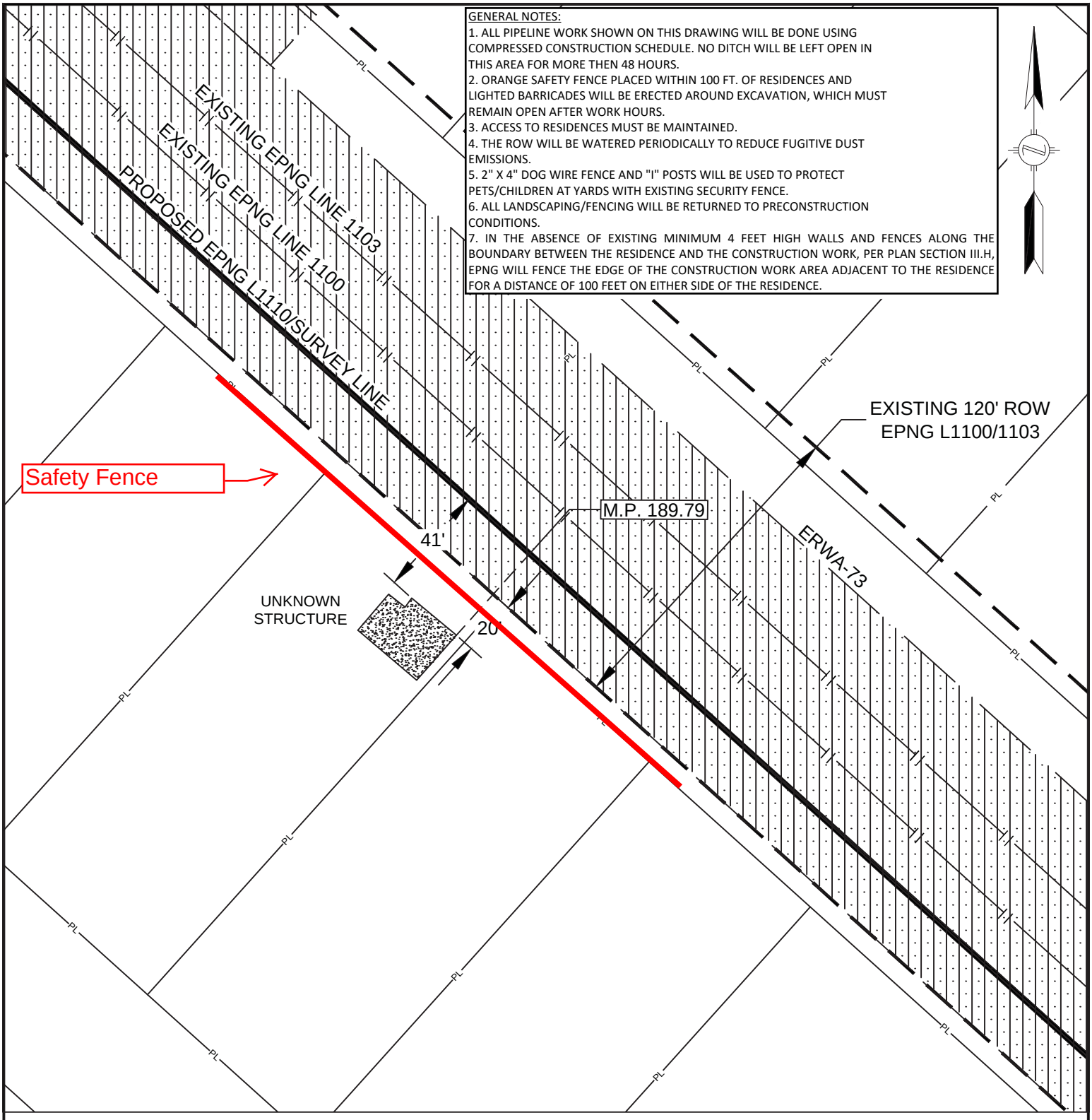
Drawing No:	3 OF 16	Rev	H



LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

H	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

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EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 189.79

Status:			
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Category:			
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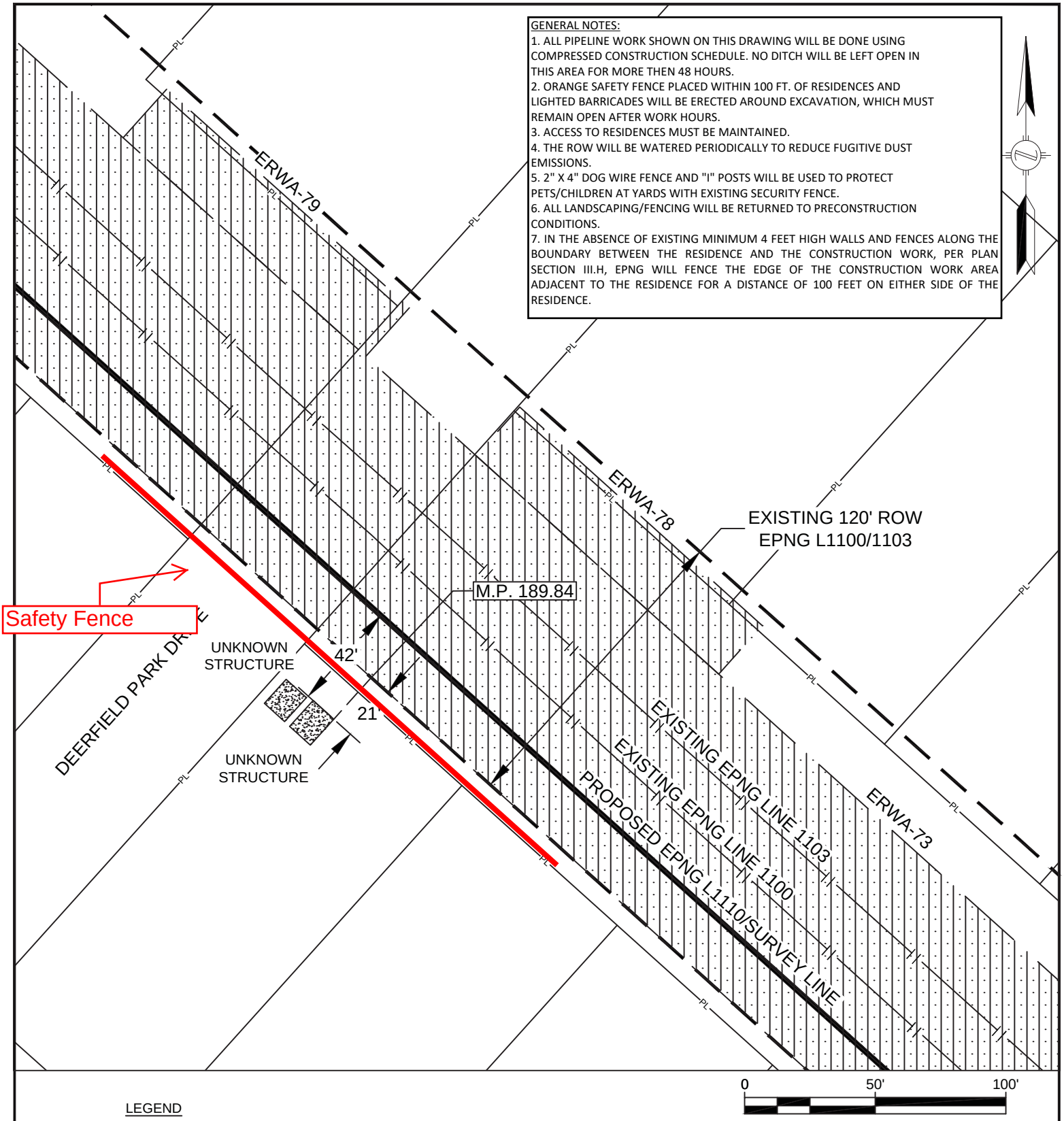
Drawing No:	4 OF 16	Rev	H



LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

C	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

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EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 189.84

Status:			
State:	TX	PIN No:	
County:	EL PASO	Scale:	1"=50'
Category:			
File Name:	61311-RES-REVH		
Drawing No:	5 OF 16	Rev	C

GENERAL NOTES:

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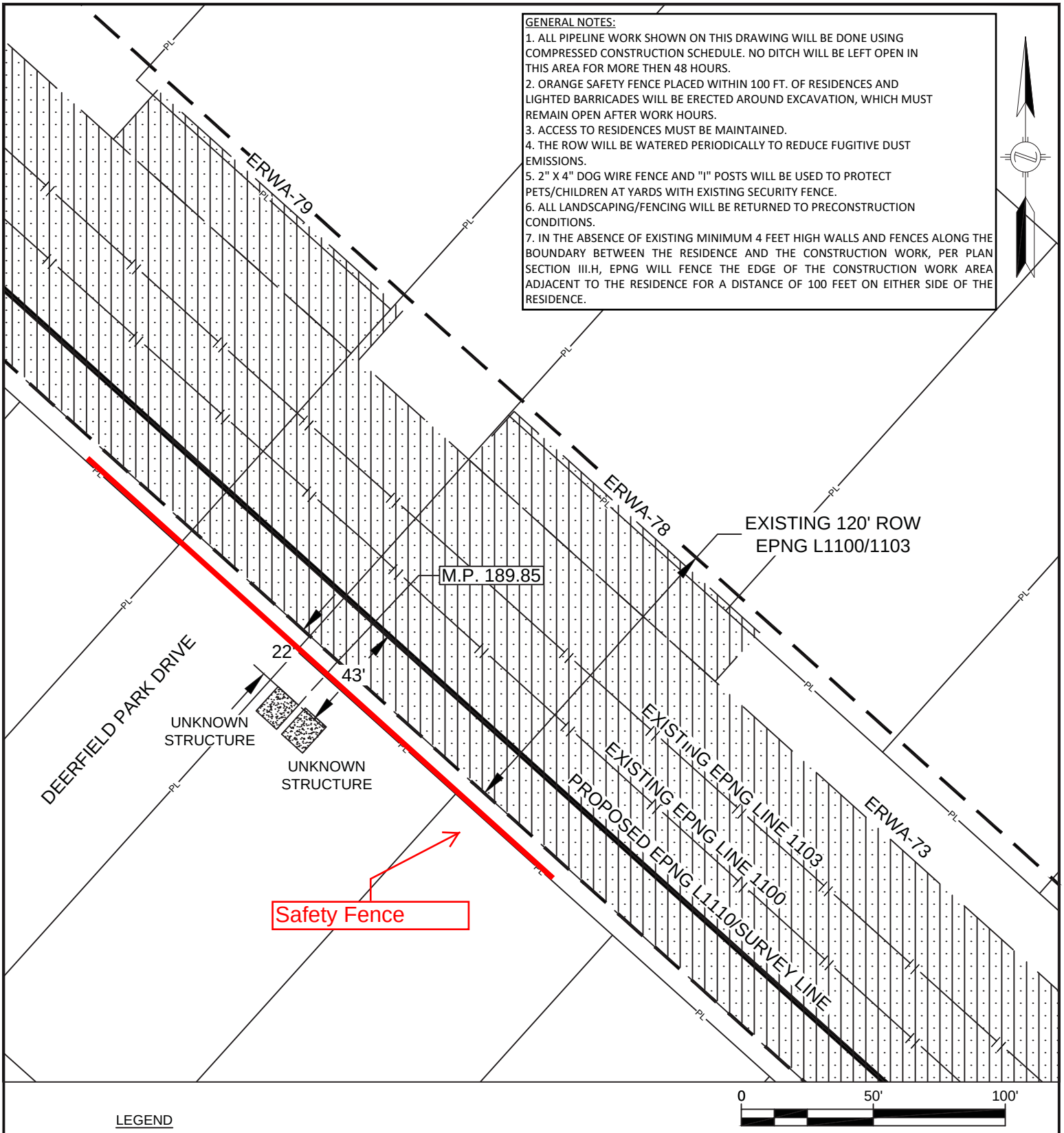

LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

C	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO.	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

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ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 189.85

Status:			
State:	TX	PIN No:	
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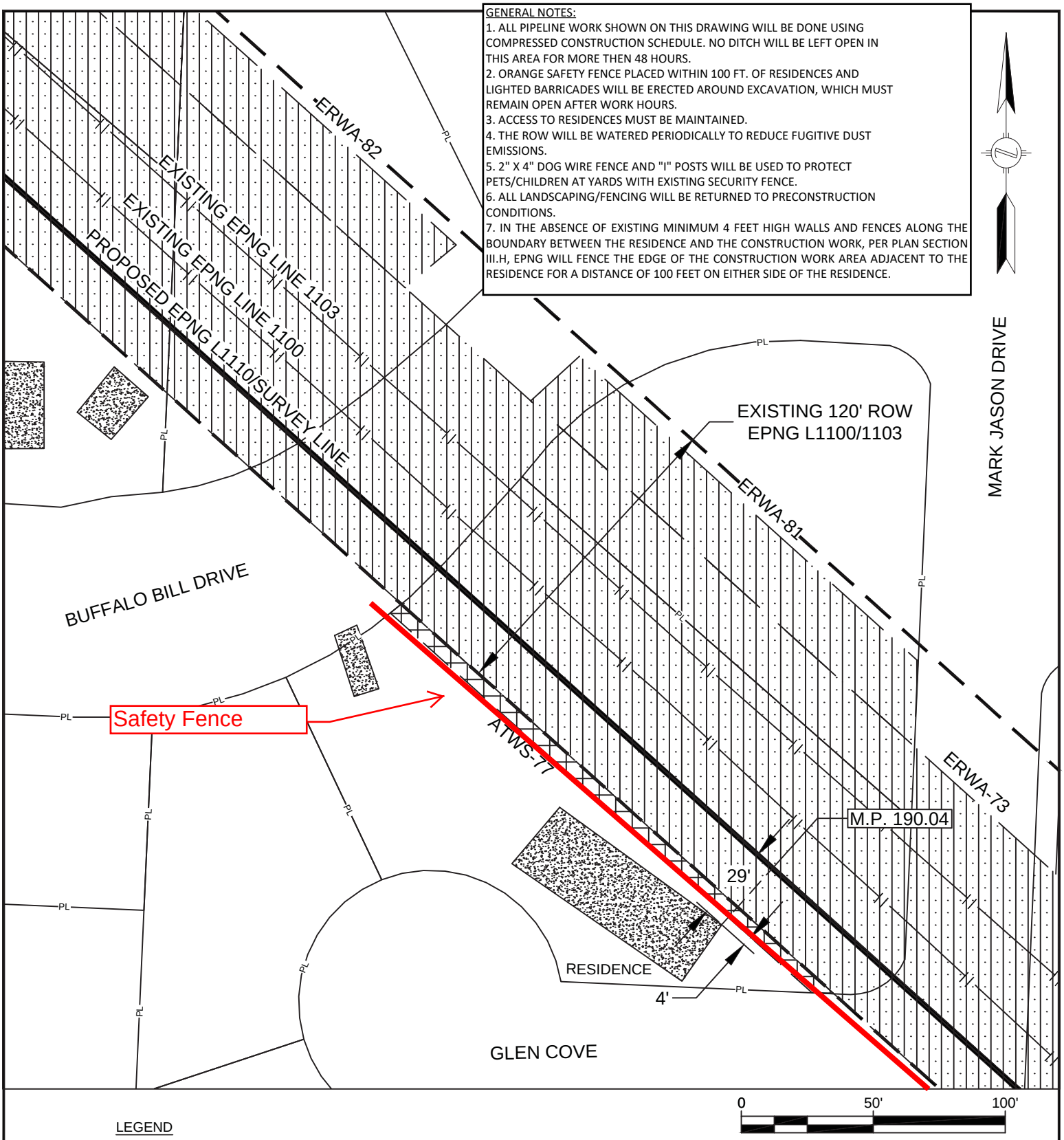
Drawing No:	6 OF 16	Rev	C



LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

H	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

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350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 190.04

Status:

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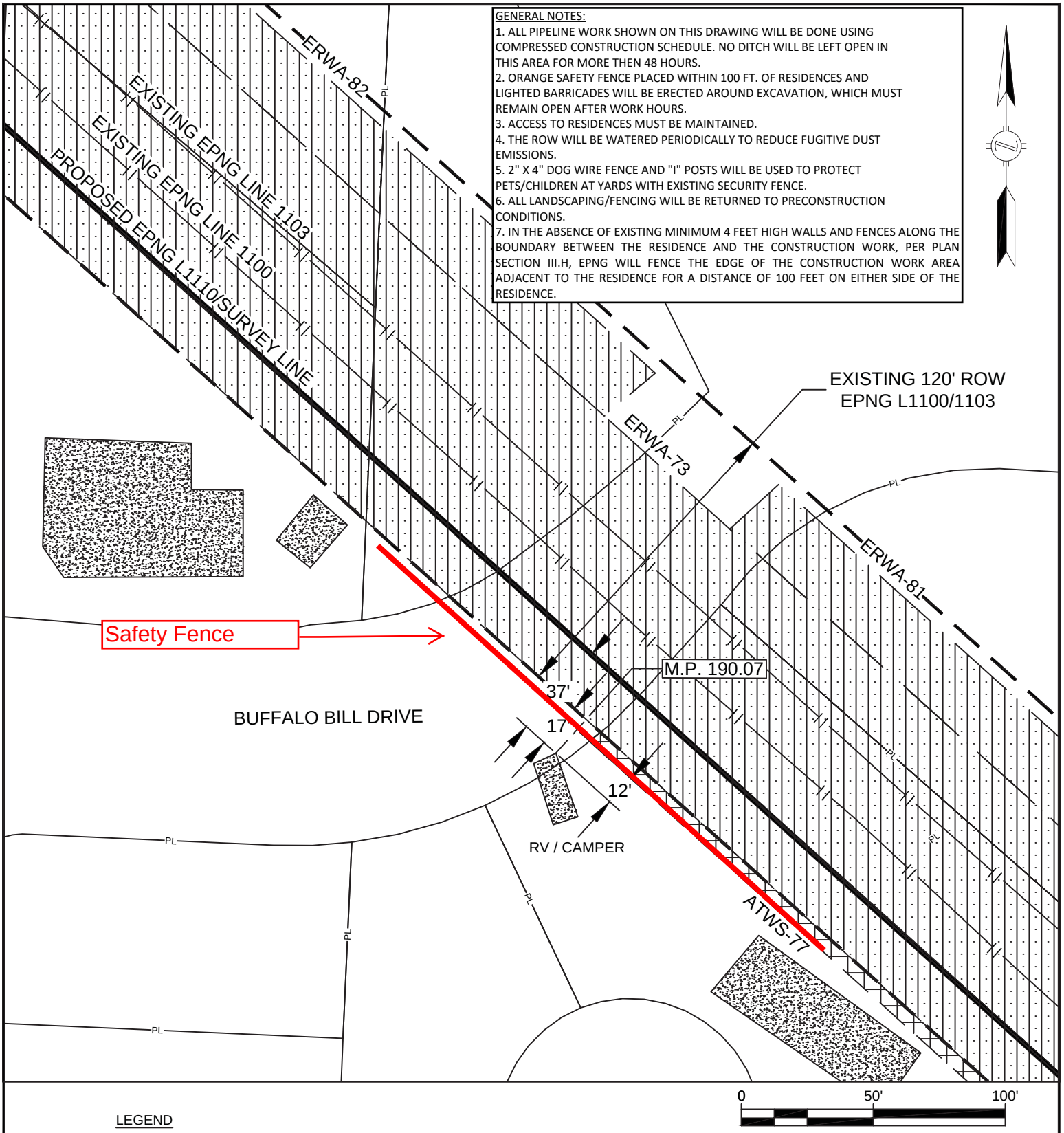
Drawing No:	7 OF 16	Rev	H



LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

H	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

KINDER MORGAN

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350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

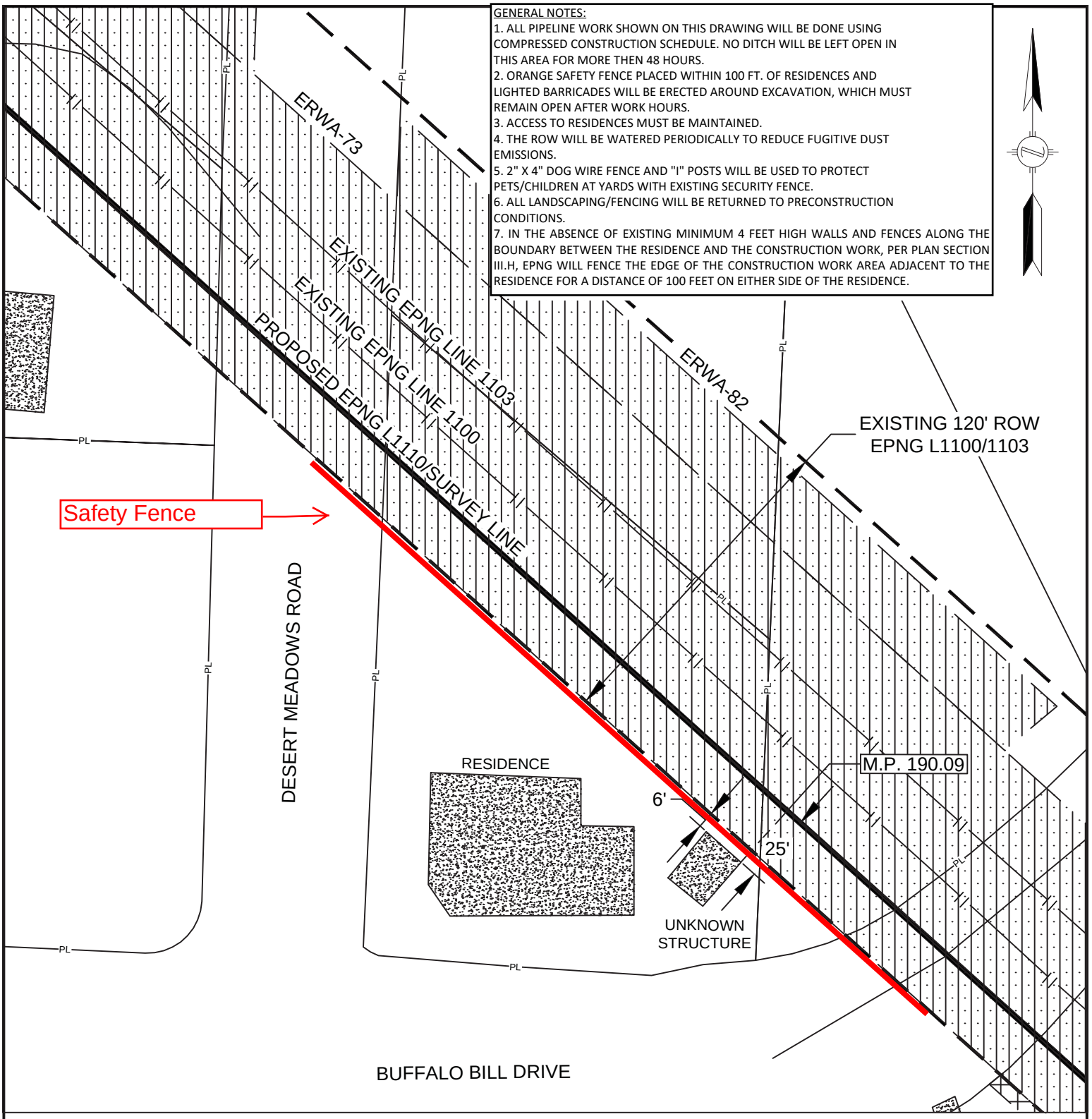
EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 190.07

Status:			
State:	TX	PIN No:	
County:	EL PASO	Scale:	1"=50'
Category:			
File Name:	61311-RES-REVH		
Drawing No:	8 OF 16	Rev	H



LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

H	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

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350 INTERLOCKEN BLVD.
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BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

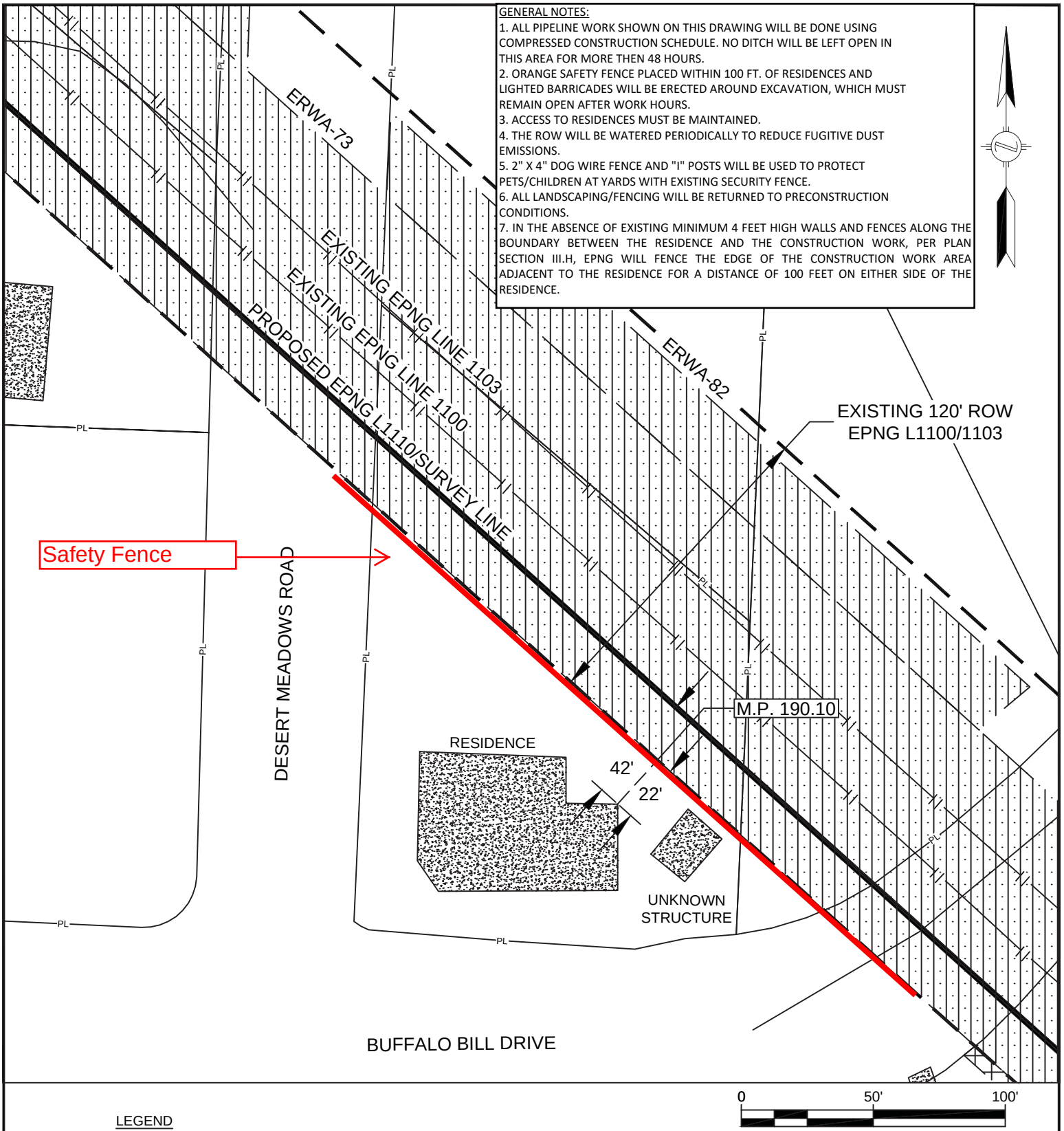
PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 190.09

Status:

State:	TX	PIN No:	
County:	EL PASO	Scale:	1"=50'
Category:			
File Name:	61311-RES-REVH		
Drawing No:	9 OF 16	Rev	H



LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

C	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

KINDER MORGAN

encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

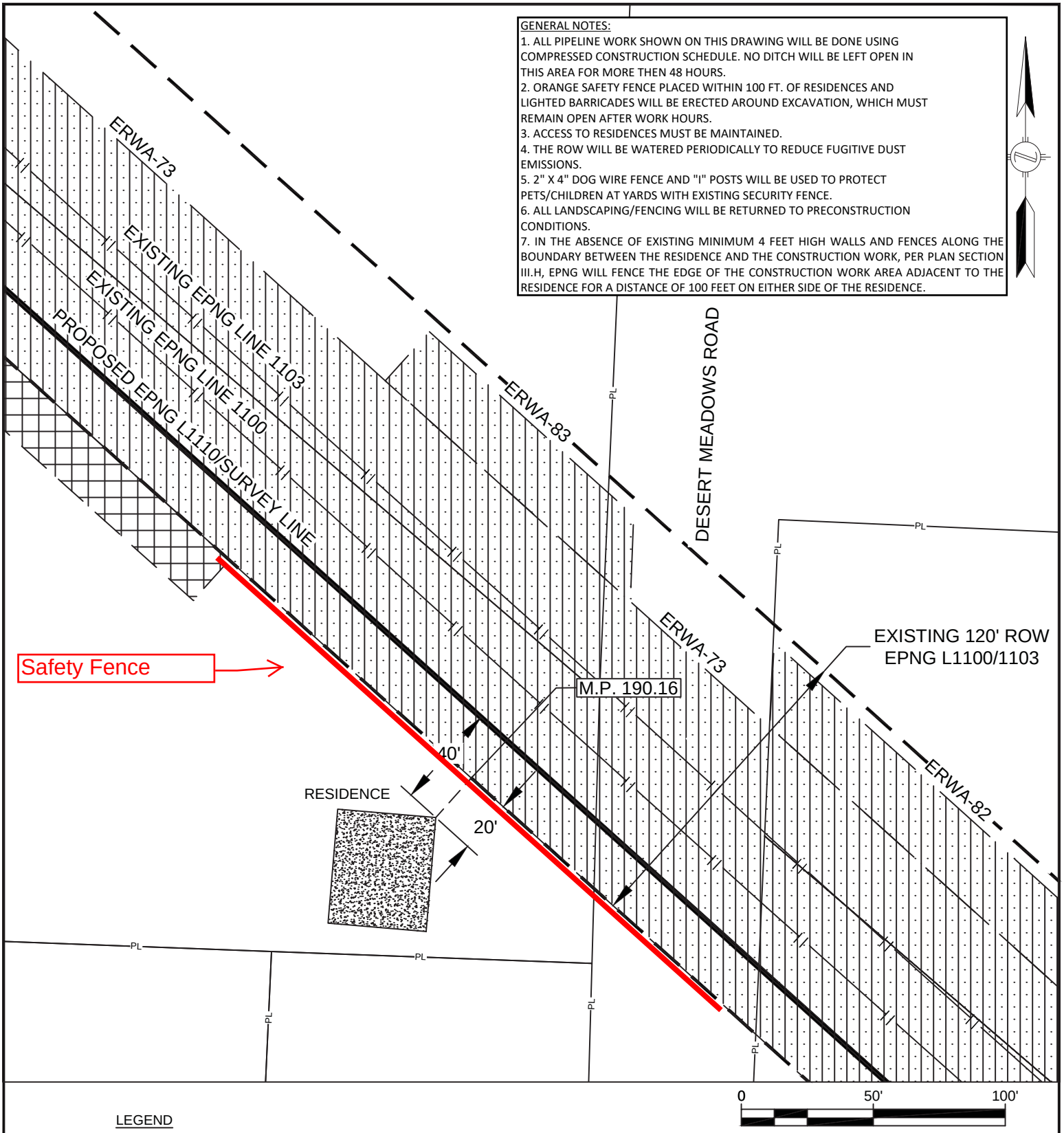
PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 190.10

Status:			
State:	TX	PIN No:	
County:	EL PASO	Scale:	1"=50'
Category:			
File Name:	61311-RES-REVH		
Drawing No:	10 OF 16	Rev	C

GENERAL NOTES:
1. ALL PIPELINE WORK SHOWN ON THIS DRAWING WILL BE DONE USING COMPRESSED CONSTRUCTION SCHEDULE. NO DITCH WILL BE LEFT OPEN IN THIS AREA FOR MORE THEN 48 HOURS.
2. ORANGE SAFETY FENCE PLACED WITHIN 100 FT. OF RESIDENCES AND LIGHTED BARRICADES WILL BE ERECTED AROUND EXCAVATION, WHICH MUST REMAIN OPEN AFTER WORK HOURS.
3. ACCESS TO RESIDENCES MUST BE MAINTAINED.
4. THE ROW WILL BE WATERED PERIODICALLY TO REDUCE FUGITIVE DUST EMISSIONS.
5. 2" X 4" DOG WIRE FENCE AND "I" POSTS WILL BE USED TO PROTECT PETS/CHILDREN AT YARDS WITH EXISTING SECURITY FENCE.
6. ALL LANDSCAPING/FENCING WILL BE RETURNED TO PRECONSTRUCTION CONDITIONS.
7. IN THE ABSENCE OF EXISTING MINIMUM 4 FEET HIGH WALLS AND FENCES ALONG THE BOUNDARY BETWEEN THE RESIDENCE AND THE CONSTRUCTION WORK, PER PLAN SECTION III.H, EPNG WILL FENCE THE EDGE OF THE CONSTRUCTION WORK AREA ADJACENT TO THE RESIDENCE FOR A DISTANCE OF 100 FEET ON EITHER SIDE OF THE RESIDENCE.



LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

C	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

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ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 190.16

Status:			
State:	TX	PIN No:	
County:	EL PASO	Scale:	1"=50'
Category:			
File Name:	61311-RES-REVH		
Drawing No:	11 OF 16	Rev	C

GENERAL NOTES:
1. ALL PIPELINE WORK SHOWN ON THIS DRAWING WILL BE DONE USING COMPRESSED CONSTRUCTION SCHEDULE. NO DITCH WILL BE LEFT OPEN IN THIS AREA FOR MORE THEN 48 HOURS.
2. ORANGE SAFETY FENCE PLACED WITHIN 100 FT. OF RESIDENCES AND LIGHTED BARRICADES WILL BE ERECTED AROUND EXCAVATION, WHICH MUST REMAIN OPEN AFTER WORK HOURS.
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4. THE ROW WILL BE WATERED PERIODICALLY TO REDUCE FUGITIVE DUST EMISSIONS.
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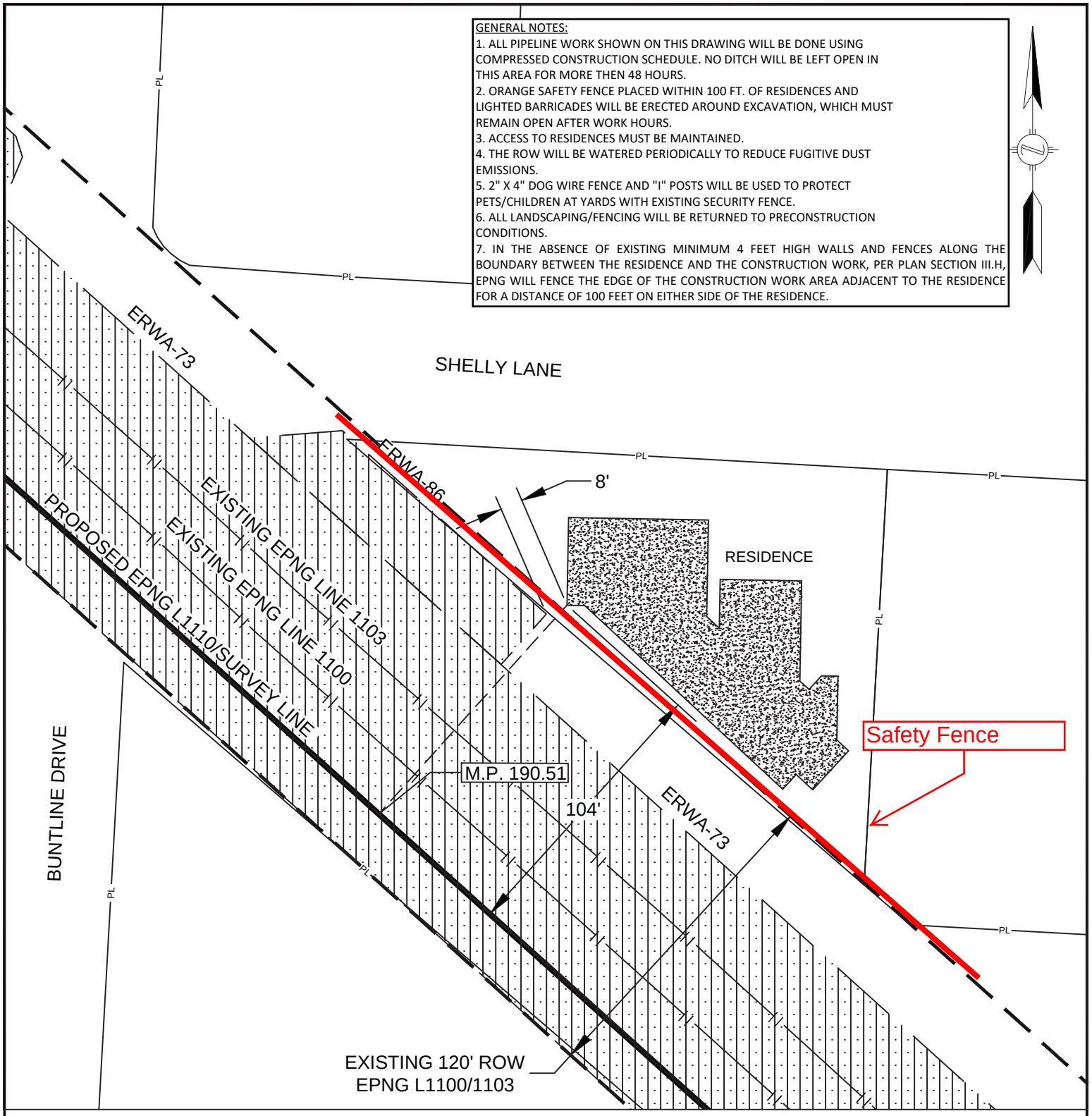
6. ALL LANDSCAPING/FENCING WILL BE RETURNED TO PRECONSTRUCTION CONDITIONS.
7. IN THE ABSENCE OF EXISTING MINIMUM 4 FEET HIGH WALLS AND FENCES ALONG THE BOUNDARY BETWEEN THE RESIDENCE AND THE CONSTRUCTION WORK, PER PLAN SECTION III.H, EPNG WILL FENCE THE EDGE OF THE CONSTRUCTION WORK AREA ADJACENT TO THE RESIDENCE FOR A DISTANCE OF 100 FEET ON EITHER SIDE OF THE RESIDENCE.



LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

B	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

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ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

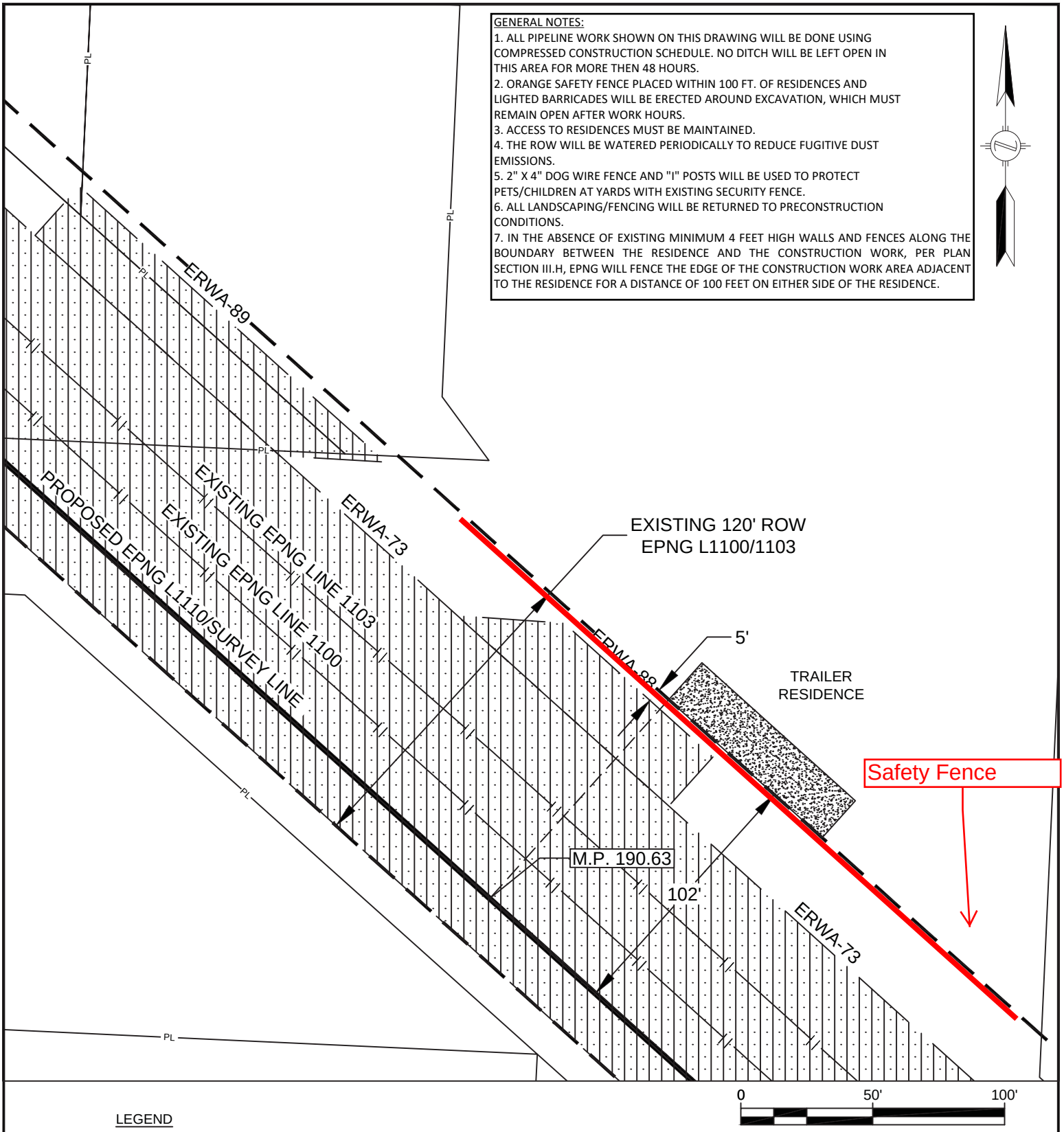
EL PASO COUNTY, TEXAS

M.P. 190.51

Status:			
State:	TX	PIN No:	
County:	EL PASO	Scale:	1"=50'
Category:			
File Name:	61311-RES-REVH		
Drawing No:	12 OF 16	Rev	B

GENERAL NOTES:

1. ALL PIPELINE WORK SHOWN ON THIS DRAWING WILL BE DONE USING COMPRESSED CONSTRUCTION SCHEDULE. NO DITCH WILL BE LEFT OPEN IN THIS AREA FOR MORE THEN 48 HOURS.
2. ORANGE SAFETY FENCE PLACED WITHIN 100 FT. OF RESIDENCES AND LIGHTED BARRICADES WILL BE ERECTED AROUND EXCAVATION, WHICH MUST REMAIN OPEN AFTER WORK HOURS.
3. ACCESS TO RESIDENCES MUST BE MAINTAINED.
4. THE ROW WILL BE WATERED PERIODICALLY TO REDUCE FUGITIVE DUST EMISSIONS.
5. 2" X 4" DOG WIRE FENCE AND "I" POSTS WILL BE USED TO PROTECT PETS/CHILDREN AT YARDS WITH EXISTING SECURITY FENCE.
6. ALL LANDSCAPING/FENCING WILL BE RETURNED TO PRECONSTRUCTION CONDITIONS.
7. IN THE ABSENCE OF EXISTING MINIMUM 4 FEET HIGH WALLS AND FENCES ALONG THE BOUNDARY BETWEEN THE RESIDENCE AND THE CONSTRUCTION WORK, PER PLAN SECTION III.H, EPNG WILL FENCE THE EDGE OF THE CONSTRUCTION WORK AREA ADJACENT TO THE RESIDENCE FOR A DISTANCE OF 100 FEET ON EITHER SIDE OF THE RESIDENCE.



LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

B	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

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ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

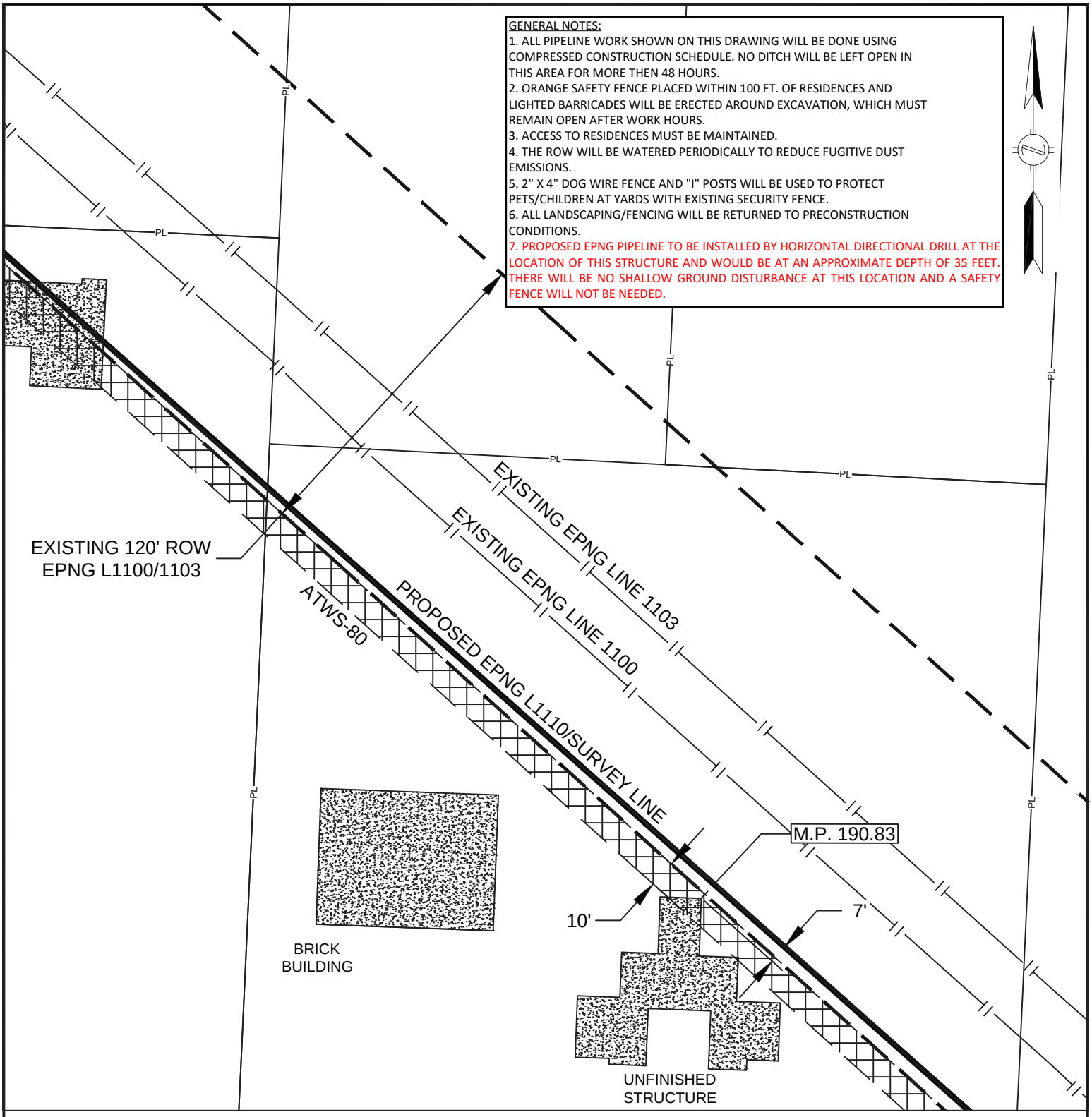
PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 190.63

Status:			
State:	TX	PIN No:	
County:	EL PASO	Scale:	1"=50'
Category:			
File Name:	61311-RES-REVH		
Drawing No:	13 OF 16	Rev	B

GENERAL NOTES:
1. ALL PIPELINE WORK SHOWN ON THIS DRAWING WILL BE DONE USING COMPRESSED CONSTRUCTION SCHEDULE. NO DITCH WILL BE LEFT OPEN IN THIS AREA FOR MORE THEN 48 HOURS.
2. ORANGE SAFETY FENCE PLACED WITHIN 100 FT. OF RESIDENCES AND LIGHTED BARRICADES WILL BE ERECTED AROUND EXCAVATION, WHICH MUST REMAIN OPEN AFTER WORK HOURS.
3. ACCESS TO RESIDENCES MUST BE MAINTAINED.
4. THE ROW WILL BE WATERED PERIODICALLY TO REDUCE FUGITIVE DUST EMISSIONS.
5. 2" X 4" DOG WIRE FENCE AND "I" POSTS WILL BE USED TO PROTECT PETS/CHILDREN AT YARDS WITH EXISTING SECURITY FENCE.
6. ALL LANDSCAPING/FENCING WILL BE RETURNED TO PRECONSTRUCTION CONDITIONS.
7. PROPOSED EPNG PIPELINE TO BE INSTALLED BY HORIZONTAL DIRECTIONAL DRILL AT THE LOCATION OF THIS STRUCTURE AND WOULD BE AT AN APPROXIMATE DEPTH OF 35 FEET. THERE WILL BE NO SHALLOW GROUND DISTURBANCE AT THIS LOCATION AND A SAFETY FENCE WILL NOT BE NEEDED.



LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

No	Revision Description	Project ID	Date
B	REVISED PER CLIENT COMMENTS	61311	04/16/18

:Reference Drawings

:Facility Name

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ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 190.83

Status:			
State:	TX	PIN No:	
County:	EL PASO	Scale:	1"=50'
Category:			
File Name:	61311-RES-REVH		
Drawing No:	14 OF 16	Rev	B

GENERAL NOTES:

1. ALL PIPELINE WORK SHOWN ON THIS DRAWING WILL BE DONE USING COMPRESSED CONSTRUCTION SCHEDULE. NO DITCH WILL BE LEFT OPEN IN THIS AREA FOR MORE THEN 48 HOURS.
2. ORANGE SAFETY FENCE PLACED WITHIN 100 FT. OF RESIDENCES AND LIGHTED BARRICADES WILL BE ERECTED AROUND EXCAVATION, WHICH MUST REMAIN OPEN AFTER WORK HOURS.
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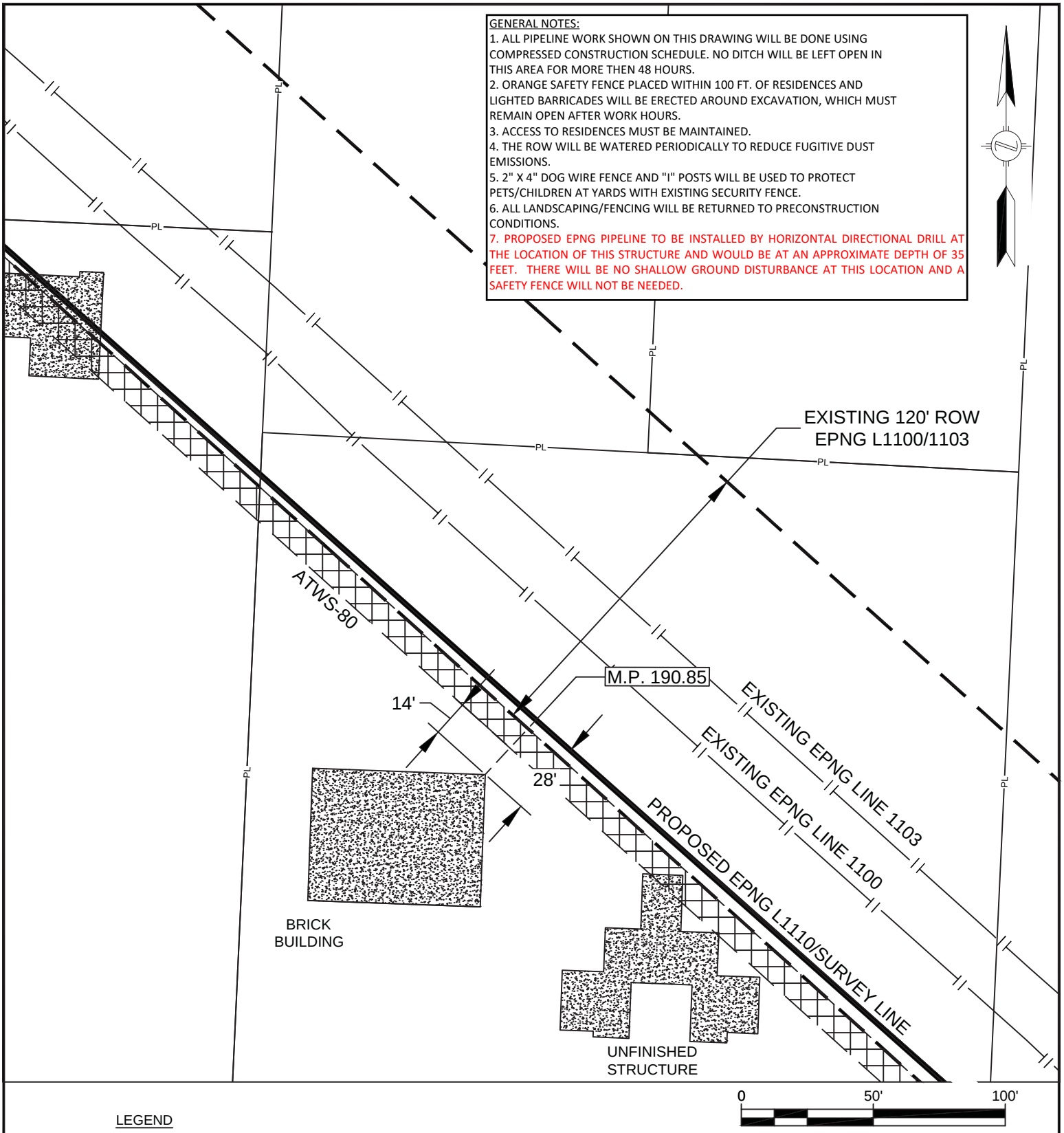
6. ALL LANDSCAPING/FENCING WILL BE RETURNED TO PRECONSTRUCTION CONDITIONS.
7. PROPOSED EPNG PIPELINE TO BE INSTALLED BY HORIZONTAL DIRECTIONAL DRILL AT THE LOCATION OF THIS STRUCTURE AND WOULD BE AT AN APPROXIMATE DEPTH OF 35 FEET. THERE WILL BE NO SHALLOW GROUND DISTURBANCE AT THIS LOCATION AND A SAFETY FENCE WILL NOT BE NEEDED.



LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

H	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO	Revision Description	Project ID	Date

:Reference Drawings

:Facility Name

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ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 190.85

Status:

State:	TX	PIN No:	
County:	EL PASO	Scale:	1"=50'
Category:			
File Name:	61311-RES-REVH		
Drawing No:	15 OF 16	Rev	H

GENERAL NOTES:

1. ALL PIPELINE WORK SHOWN ON THIS DRAWING WILL BE DONE USING COMPRESSED CONSTRUCTION SCHEDULE. NO DITCH WILL BE LEFT OPEN IN THIS AREA FOR MORE THEN 48 HOURS.
2. ORANGE SAFETY FENCE PLACED WITHIN 100 FT. OF RESIDENCES AND LIGHTED BARRICADES WILL BE ERECTED AROUND EXCAVATION, WHICH MUST REMAIN OPEN AFTER WORK HOURS.
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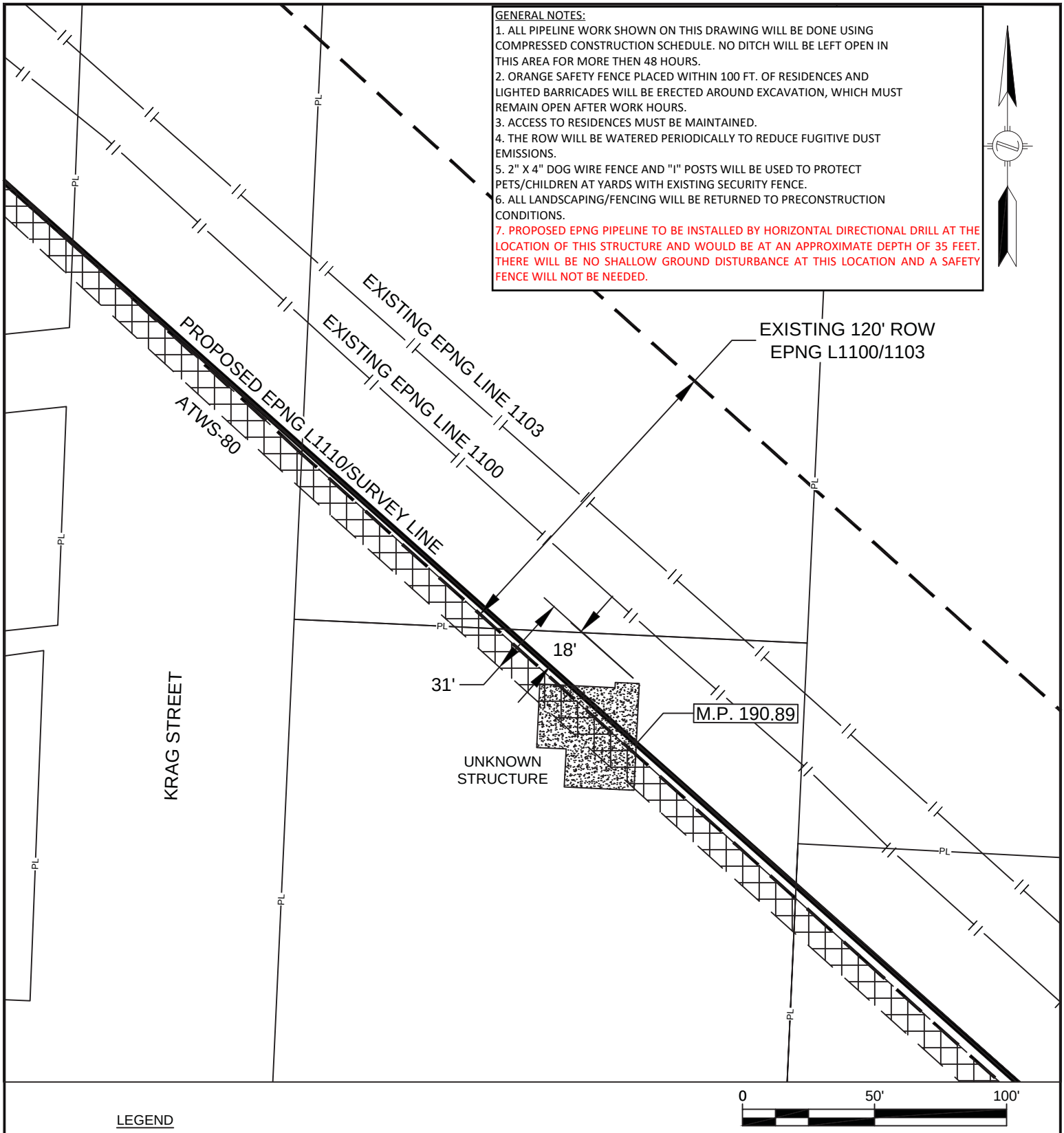
6. ALL LANDSCAPING/FENCING WILL BE RETURNED TO PRECONSTRUCTION CONDITIONS.
7. PROPOSED EPNG PIPELINE TO BE INSTALLED BY HORIZONTAL DIRECTIONAL DRILL AT THE LOCATION OF THIS STRUCTURE AND WOULD BE AT AN APPROXIMATE DEPTH OF 35 FEET. THERE WILL BE NO SHALLOW GROUND DISTURBANCE AT THIS LOCATION AND A SAFETY FENCE WILL NOT BE NEEDED.



LEGEND

ADDITIONAL TEMPORARY WORKSPACE

EXISTING R.O.W. WORK AREA

H	REVISED PER CLIENT COMMENTS	61311	04/16/18
NO	Revision Description	Project ID	Date
			:Reference Drawings
			:Facility Name

KINDER MORGAN

encompass

ENCOMPASS ENERGY SERVICES
350 INTERLOCKEN BLVD.
SUITE 350
BROOMFIELD, CO. 80021

EPNG SOUTH MAINLINE EXPANSION PROJECT

PROPOSED EPNG L1110/SURVEY LINE
RESIDENTIAL CONSTRUCTION DETAIL

EL PASO COUNTY, TEXAS

M.P. 190.89

Status:			
State:	TX	PIN No:	
County:	EL PASO	Scale:	1"=50'
Category:			
File Name:	61311-RES-REVH		
Drawing No:	16 OF 16	Rev	H

Appendix E

Projects Potentially Contributing to Cumulative Impacts

APPENDIX E-1 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS IN THE CUMULATIVE IMPACT ASSESSMENT AREA FOR THE LOOP LINE PROJECT

Action	Description	Status / Schedule	Distance from Loop Line	Resources Assessed For Cumulative Impacts
Residential and Commercial Development	Low- to Medium—Density Residential Development and Low- to Medium-Intensity Commercial Development	Currently ongoing	Throughout El Paso and Hudspeth Counties. Development occurs immediately adjacent to project.	Wildlife, Vegetation
US 62 Road Widening (TXDOT 2018)	Widen 4-Lane, Undivided to 6-Lane, Divided and construct overpass	Under Development, Bids to be received in 2025 (*beyond South Mainline temporal scope*)	The proposed project crosses US 62	Wildlife, Vegetation
Horizon Corporation Land Purchases	Land was bought around the El Paso, Texas area from Horizon Corporation between 1962 and 1975	Complete	Parcels are immediately adjacent to the project	Land Use
EPNG Hueco Compressor Station	EPNG-operated Compressor Station in Hudspeth County, Texas	Complete	Adjacent to southeastern end of the project	Wildlife, Vegetation, Air Quality, Noise
EPNG Line No. 1110	EPNG-operated natural gas pipeline in Hudspeth County, Texas	Complete	Adjacent to southeastern end of the project	Wildlife, Vegetation during ROW maintenance
EPNG Line No. 1103	EPNG-operated natural gas pipeline in Hudspeth and El Paso Counties, Texas	Complete	Runs parallel to the entire project	Wildlife, Vegetation during ROW maintenance
EPNG Line No. 1100	EPNG-operated natural gas pipeline in Hudspeth and El Paso Counties, Texas	Complete	Runs parallel to the entire project	Wildlife, Vegetation during ROW maintenance
EPNG Line No. 1136	EPNG-operated natural gas pipeline in Hudspeth and El Paso Counties, Texas	Complete	Adjacent to and runs southwest from the project, averaging approximately 6.5 miles from project	Wildlife, Vegetation during ROW maintenance
EPNG MLV 22	EPNG-operated MLV in El Paso County, Texas	Complete	Adjacent to northwestern end of the project	Wildlife, Vegetation during ROW maintenance
KN Energy Company Pipeline	KN Energy Company-operated pipeline	Complete	Crosses the project and runs parallel to project approximately 1.0 mile north	Wildlife, Vegetation during ROW maintenance

Action	Description	Status / Schedule	Distance from Loop Line	Resources Assessed For Cumulative Impacts
Uranium Mine	Unknown Abandoned Uranium Mine	Complete	Approximately 0.33 miles northeast of the project at MP 186.6	Wildlife, Vegetation
Sand and Gravel Pit Mine	Unknown Sand and Gravel Pit Mine	Unknown, but assumed complete.	Approximately 1.08 miles northeast of the project at MP 179	Wildlife and Vegetation
Sand and Gravel Pit Mine	Unknown Sand and Gravel Pit Mine	Unknown, but assumed complete.	Approximately 0.75 miles northeast of the project at MP 188.1	Wildlife, Vegetation
Sand and Gravel Pit Mines (3)	Unknown Sand and Gravel Pit Mines	Unknown, but assumed complete.	Approximately 1.3 (2) and 1.5 (1) miles southwest of the project at MP 179.8	Wildlife and Vegetation
Sand and Gravel Pit Mine	Unknown Sand and Gravel Pit Mine	Unknown, but assumed complete.	Approximately 1.3 miles southwest of the project at MP 180.3	Wildlife and Vegetation

APPENDIX E-2 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS IN THE CUMULATIVE IMPACT ASSESSMENT AREA FOR RED MOUNTAIN COMPRESSOR STATION

Action	Description	Status / Schedule	Distance from Red Mountain Compressor Station	Resources Assessed For Cumulative Impacts
Butterfield Trail Regional Landfill (Deming).	The 320-acre Butterfield Trail Regional Landfill is an existing facility that receives solid waste from commercial haulers. The solid waste will be placed and compacted in lined phases in cells that are served by environmental management control systems. The waste is covered with at least 6" of soil or an alternate cover.	Currently ongoing	Approximately 1.0 miles west	Wildlife, Vegetation
Grazing and Ranching	Cattle Grazing; guest ranches	Currently ongoing	Throughout Luna County. Parcels surrounding the Red Mountain Compressor Station are rangeland.	Wildlife, Vegetation
EPNG Line No. 1100	EPNG-operated natural gas pipeline in Luna County, NM	Complete	Adjacent to the project	Wildlife, Vegetation during ROW maintenance
EPNG Line No. 1103	EPNG-operated natural gas pipeline in Luna County, NM	Complete	Adjacent to the project	Wildlife, Vegetation during ROW maintenance
EPNG Line No. 1600	EPNG-operated natural gas pipeline in Luna County, NM	Complete	Adjacent to the project	Wildlife, Vegetation during ROW maintenance
EPNG Line No. 2000	EPNG-operated natural gas pipeline in Luna County, NM	Complete	Adjacent to the project	Wildlife, Vegetation during ROW maintenance
EPNG Deming Compressor Station	EPNG-operated Compressor Station in Luna County, New Mexico	Decommissioned	Adjacent to the project	Visual

APPENDIX E-3 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS IN THE CUMULATIVE IMPACT ASSESSMENT AREA FOR DRAGOON COMPRESSOR STATION

Action	Description	Status / Schedule	Distance from Dragoon Compressor Station	Resources Assessed For Assessed For Cumulative Impacts
Agriculture, Grazing and Ranching	Crop production, Cattle Grazing; guest ranches	Currently ongoing	Throughout Cochise County. Parcels surrounding the Dragoon Compressor Station are agricultural production	Wildlife, Vegetation
Residential and Commercial Development	Low-Density, Single Family Home Residential Development and Low-Intensity Commercial Development	Complete	Throughout Cochise County. Development begins approximately 0.5 miles from the project site, outside of CIAA	Wildlife, Vegetation
Southline Transmission Project (Southline 2018)	Southline Transmission, L.L.C would construct a 225-mile-long transmission line between Afton, New Mexico and Apache, Arizona, and upgrade and rebuild a 130-mile-long transmission line between the existing Apache and Saguaro Substations.	Construction to occur in 2018, phased into operation 2018-2020	Approximately 4 miles northwest	Wildlife, Vegetation, Socioeconomic
EPNG Line No. 1100	EPNG-operated natural gas pipeline in Cochise County, AZ	Complete	Adjacent to the project	Wildlife, Vegetation during ROW maintenance
EPNG Line No. 1103	EPNG-operated natural gas pipeline in Cochise County, AZ	Complete	Adjacent to the project	Wildlife, Vegetation during ROW maintenance
Willcox Compressor Station	EPNG-operated natural gas fired compressor Station	Complete	500 feet from the project	Air and Noise, wildlife, vegetation, visual